This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

War H58.58

Harvard College Library

FROM THE

BRIGHT LEGACY.

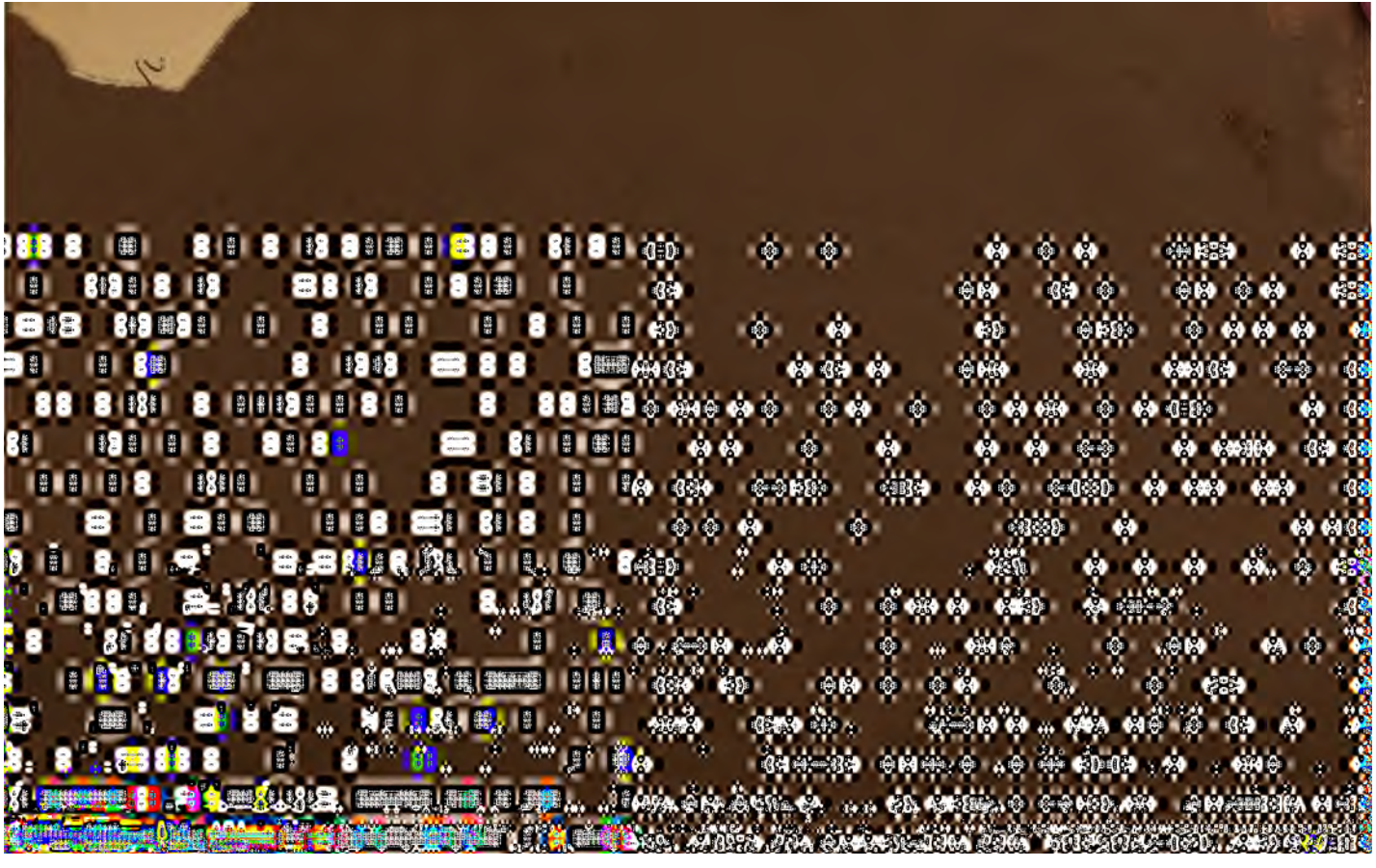
One half the income from this Legacy, which was received in 1880 under the will of

JONATHAN BROWN BRIGHT

of Waltham, Massachusetts, is to be expended for books for the College Library. The other half of the income is devoted to scholarships in Harvard University for the benefit of descendants of

HENRY BRIGHT, JR.,

who died at Watertown, Massachusetts, in 1686. In the absence of such descendants, other persons are eligible to the scholarships. The will requires that this announcement shall be made in every book added to the Library under its provisions.



Francis Fessenden
Capt. 19th Infantry, U. S. A.

THE

THEORY OF WAR.

ILLUSTRATED BY NUMEROUS

EXAMPLES FROM MILITARY HISTORY.

BY

LIEUT.-COL. P. L. MACDOUGALL,

SUPERINTENDENT OF STUDIES AT THE ROYAL MILITARY COLLEGE.

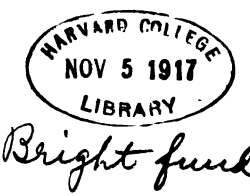
SECOND EDITION.

LONDON:

LONGMAN, BROWN, GREEN, LONGMANS, & ROBERTS.

1858.

War 458.58



Bright fund

LONDON:
Printed by SPOTTISWOODE & CO.
New-street Square.

TO THE

YOUNG OFFICERS OF THE BRITISH ARMY,

IN ADMIRATION OF THEIR COURAGE AND CONSTANCY,

AND IN THE HOPE THAT THEY MAY BE INDUCED TO STUDY THE PRINCIPLES OF THAT PROFESSION WHICH THEY HAVE SO NOBLY ILLUSTRATED BY THOSE QUALITIES,

This Book is Dedicated

BY

A BROTHER OFFICER.

PREFACE.

In the following pages I have endeavoured to render the study of the rules, which have been framed on the campaigns of the great masters of the art of war, easy and interesting not only to the young soldier, but also to the general reader.

A perfect knowledge of the principles which it is the object of this book to explain, and of their correct application *in theory*, may easily be acquired by any person of average intellect. Their correct application *in practice* belongs to a great commander alone.

All instruction in the details of the different branches of the military art, should be based on those principles, and be subordinate to them; they afford a sure test by which to

judge of every military operation great and small, from the attack or defence of a house to the attack or defence of a fortress,—from the posting of an outpost to the placing of an army in position; and the details will be more interesting, and a knowledge of them will consequently be more easily acquired, when they can be referred intelligently to general rules, which have been previously fixed in the mind.

The branches of fortification and surveying, as taught in our military schools, are, it must be remembered, only the tools of the military art; and an officer may have an intimate acquaintance with these branches, without rising at all above the mechanical part of them, or learning intelligently how they should be applied.

To avoid constant references, I state here that the first four chapters are compiled from the writings of Napoleon, Frederick, the Archduke Charles, and Jomini, and from the only classical military history in our language,

Napier's "Peninsular War." In those chapters there can, obviously, be nothing new except the method of arrangement. That method was partly suggested by Yates's valuable "Treatise on Strategy."

The chapter on Manœuvres is one which will, I trust, be found useful. Whether the subject has been well treated in that chapter or not, something of the sort is much wanted.

If I have been occasionally rather minute in explanation, it has been owing to the desire to smooth as much as possible the path of the learner; and the error, if one there be, is a fault on the right side.

R. M. C., Sandhurst,
Aug. 31, 1856.

Since the above was written, the new system of depôt battalions has been organised and promulgated. That system appears to be admirably calculated, if properly adminis-

tered, and rigorously supervised (of which the appointment of an energetic Inspector-General gives a good guarantee), to strike at the root of some of the evils which have hitherto prevailed in our army, particularly with reference to the habits of the very young officers. It will moreover afford the means of establishing an uniform system of practical and theoretical military instruction.

Oct. 29. 1856.

TABLE OF CONTENTS.

INTRODUCTORY CHAPTER.

	Page		Page
PREPARATION FOR BATTLE -	1	Weight carried by Soldier -	22
Preservation of the Army -	5	Secrecy - - - - -	24
Medical Department - -	6	Treatment of Inhabitants -	25
Commissariat - - -	9	THE STAFF - - - -	26
Ordnance Department - -	11	Chief of the Staff - - -	26
The Soldiers not to be over-worked - - - - -	11	Adjutant-General - - -	27
		Quartermaster-General - -	27
Land Transport—Detail -	14	EDUCATION OF OFFICERS -	29
Engineer Transport - -	14	French System - - -	34
Infantry Reserve Ammunition -	15	Outpost Duty - - -	37
Artillery Transport - -	15	Choice of a Position - -	38
Land Transport - - -	16	The Attack - - - -	39
Sea Transport - - -	17	Drill - - - - -	39
Combinations of Movement -	18	Skill in using Weapons - -	41
The March - - - -	18	Cavalry - - - - -	42
Training to March - - -	21	Moral Considerations - -	43

DEFINITIONS, Page 44.

CHAPTER I.

THE PRINCIPLES OF WAR.

Plan of Campaign, Page 52.

DEFINITIONS—STRATEGICAL POINTS, Page 63.

CHAP. II.

BASES AND COMMUNICATIONS.

CHOICE OF A BASE - - -	66	CHOICE OF A LINE OF OPERATIONS - - - - -	76

CHAP. III.

MAXIMS.

	Page
Siege of Prague	98
Battle of Leuthen	99
Campaign of Jena	100
Sir John Moore	101
Wellington	102
Turenne	105
Sieges	107
NOTE ON SIEGE OF SEBASTOPOL	110

EXAMPLES TO CHAPTERS II. AND III.

	Page
Campaign of 1756	116
„ „ 1757	119
„ „ Pultowa	124
„ „ in Germany	126

DEFINITIONS—TACTICAL POINTS, Page 142.

CHAP. IV.

ATTACK AND DEFENCE OF POSITIONS.

Choice of Positions	146
Tactics	152
EXAMPLES OF MAXIM 29	167

CHAP. V.

LINES OF DEFENCE.

Deserts, Mountain Ranges, &c.	170
PASSAGE OF RIVERS	174
ARTIFICIAL LINES OF DEFENCE	183

CHAP. VI.

MORAL AGENTS IN WAR.

Personal Qualities of a General-in-chief	192
Stratagems	193
Elation and Depression of Soldiers	194
Information	194
EXAMPLES	195
Napoleon's Army of Reserve	195
Passage of the Po at Placentia	196
Bold Manœuvres of Turenne	199
Sir Charles Napier	202

EXAMPLES TO CHAPTERS V. AND VI.

Marlborough's Passage of the Lines of the Mehaigne	207
Lines of Bouchain	211

PASSAGE OF RIVERS.

Alexander's Passage of the Hydaspes	222
Attempted Passage of the Aar by the Archduke Charles	226

CHAP. VII.

MANŒUVRES.

	Page
The Three Arms	233
Artillery	236
Cavalry	239
Infantry	242
Maxims	247

CHAP. VIII.

TO YOUNG OFFICERS.

Habits of young Officers	287
Duties of an Officer	288
Life in Quarters	290
Active Service	293
Equipment	294
Livy's Character of Philopœmen	299
Napoleon's Maxim	300

EXAMPLES OF BATTLES TO ILLUSTRATE FOREGOING CHAPTERS.

Battle of Lowositz	301
Austrian Position	301
Observations	304
Battle of Prague	306
Austrian Position	307
Prussian Position	307
Observations	310
Battle of Kollin	313
Austrian Position	314
Observations	318
Battle of Hastenbeck	321
Position of the Duke of Cumberland	321
Observations	323
Battle of Torgau	325
Austrian Position	326
Observations	328
Battle of Nordlingen	330
Bavarian Position	330
French Disposition	330
Observations	333
Battle of Blenheim	334
French Position	334
Marlborough's Dispositions	336
Observations	339
Battle of Ramillies	340
French Position	340
Remarks on the Position	341
Observations	345
Battle of Arcola	346
Description of the Ground	348
Observations	353

THEORY OF WAR.

INTRODUCTORY CHAPTER.

"Every purpose is established by counsel; and with good advice make war." — PROVERBS, xx. 18.

THE Peace which has just been concluded may not be of long continuance.* The war has doubtless had the effect of convincing most officers of the advantage of devoting the leisure time of peace to

* This was written immediately after the conclusion of the Russian war.

It is easy to read by the light of the past, and to condemn the errors committed by successive ministers in the hasty and unwise reduction of many thousands of trained soldiers at the end of a great war; but when the necessity is removed the lesson always is, and always will be, forgotten. It is vain to expect it will ever be otherwise under a Representative Government, and we must take the evil with the good. Wisdom lies with the few, but the power of the purse with the many, who will never consent to tax themselves to provide against an evil which is only probable, not present.

But if the Minister had resisted the reductions forced upon him at the end of the Russian war, on what high ground he would now stand, and how much increased would be his power for good for the future!

acquiring that knowledge of the theory of their profession which has to be practically applied in war; without which the conduct of military operations at the outbreak of hostilities is likely to be a succession of blunders, dearly to be paid for by much valuable life and treasure.

In this introductory chapter it will be sought to touch generally on the details of the Art of War, without being too minute; and to point out some of the most important objects to which the attention of a general in command of an army must be unceasingly directed in order to carry on that art with success.

The science of war has been divided into the two branches of Strategy and Tactics; and though no very cogent reason exists for such separation, the objects as well as the principles of both being identical, such distinction having been made, it is better to preserve it.

The arbitrary distinction which has been made by military writers is that, *Strategy* relates to the movements of an army on the theatre of war, when not in actual presence or eyesight of an enemy, however great or small the distance which separates them; while *Tactics* relates exclusively to the movements of an army when *in* the actual presence or eyesight of an enemy.

The following definition applies equally to both.

Strategy and *Tactics* are the art of placing in a certain position at a certain time (meaning the *right* position at the *right* time), a body of troops *in fighting order* superior to that body which your enemy can there oppose to you.

The terms of the definition may be modified to suit the circumstances of different armies, but the principal remains the same. For example, of two armies A and B, on the theatre of war, A numbers 20,000 men, while B numbers 40,000. Yet A may, on account of its composition and general condition as regards discipline, exercise, &c., be fully equal to B in effective force though so inferior in number.

Such being the case, the problem would be solved, supposing the 20,000 men of A to fall upon 30,000 of B, after B had been diminished to that extent.

In the same manner the spirit of the problem will be observed, where a general at the head of a much inferior force to that of the enemy on the theatre of war, supposing him to have received orders to cover a certain frontier or protect a district or town, throws himself in the enemy's path with every disposable man of his own army, while the enemy has brought to bear on the same point only a fraction of his force, albeit that fraction may be numerically the stronger.

The most brilliant example of this in history, ancient or modern, is found in the manœuvres by

which Napoleon in 1814 kept several armies at bay, and covered Paris for so long a time; dealing blows first to one adversary then to another; blows felt almost before they were seen, in so quick a succession and at such a distance from each other, that his army appeared, like Sir Boyle Roche's bird, to be gifted with obliquity.

But the problem, so simply stated in the definition, requires for its practical solution those great qualities of brain and nerve, the happy and rare combination of which in the same person constitutes their possessor a great commander.

Let us analyze the terms of the problem, and see what they imply a little at large.

The skilful handling of troops in presence of an enemy so as to ensure the superiority in an encounter, though indispensably necessary, and the most prominent and showy quality in a commander, is one of comparatively infrequent exercise. The superficial observer reads that an army was placed in order of battle at a certain place on a certain day, and that it beat the enemy. He thinks it very glorious, and looks on the victorious general as a great commander. But he looks only on the surface; he does not consider how the army was placed in that position; what deep thought, sagacious providence, accurate combinations of movement it required to place the army in the right position at the right

time; failing in which the genius of a Cæsar, Napoleon, and Wellington combined (as regards merely the direction of a battle), would be useless. The qualities of a great commander in preparing his troops for battle, as compared with those displayed in directing them in battle, are called forth and exercised in the ratio of twenty to one. Armies have twenty days' marching, countermarching, bivouacking, &c., to one of fighting at the least.

Preparation for Battle.

The preparation of an army for battle, or the operation of placing it in fighting order in the right position at the right time, may be divided into two heads.

1st. The army has to be preserved for the day of battle; and,

2nd. The army has to be forwarded to the place of battle.

Preservation of the Army.

The preservation of an army comprises all pertaining to hospitals, clothing, food, shelter, as well as everything that can conduce to the health and comfort of the men.

In this work the medical, commissariat, and transport departments co-operate, as well as the general staff of the army. These are presided over by independent heads, who take their orders direct from the

commander of the army, or from the chief of the staff, where such exists; and who are responsible to the general commanding for the efficient performance of the duties of their respective branches.

The harmonious action of the above-named departments will depend very much on the personal character of the general commanding, who will not (if he be fit to command) permit the existence of jealousy or absurd punctilio between departments to stand in the way of the public service. If he find his tools do not work well, he will throw them away and try others until he is suited to his mind.

A break down in any one of the above-named branches would paralyze the whole army.

A few details respecting the different departments above mentioned may be interesting, and useful as affording means for a short comparison between our system and that of our allies the French.

Medical Department.

The medical department is presided over by the principal medical officer (or for the sake of brevity, the P. M. O.); all the medical officers of the force are under his command. Under his control, also, are the following two departments of supply; viz. that of the apothecary-general for medicines, and that of the purveyor-general for medical comforts. These last include wine, brandy, porter, arrow-root, sago, &c., beds and blankets for the sick, hospital

marquees and tents, as well as stretchers for the wounded, a certain number of which are supplied to each regiment. The medical organization of the British army is regimental, as distinguished from that of the French, which is divisional. Each regiment has one surgeon and two assistant-surgeons belonging to it. The supply of medicines for each regiment in the field is carried by a mule in two hospital panniers. The medical service of each division is presided over by the senior medical officer of the division, who may be styled the divisional P. M. O. A supply of medicines and comforts accompanies each division under control of its P. M. O., who distributes them to the different regiments on the requisition of their respective surgeons. These divisional stores are replenished when required by order of the army P. M. O., from the general stores of the apothecary and purveyor-general, on the requisition of the divisional P. M. O. The P. M. O. is responsible that the general stores of the apothecary and purveyor-general, as well as the divisional and regimental stores, are constantly and adequately provided. The general stores are his immediate and particular charge; the others he must frequently and minutely inspect. During the late war, intermediate depôts of medicines and comforts were formed at Scutari, from which the army stores were furnished on the requisition of the P. M. O.

The vehicles in use for carrying sick and wounded are: — 1st, mule-chairs and litters; 2nd, ambulance waggons; 3rd, Irish cars.

The mule chairs and litters, or "cacolets," though the motion of the animal causes intense suffering to the wounded, are necessary for such ground as waggons cannot go over.

The ambulance waggons, which hold four lying on shelves in two tiers, and four sitting, are heavy, unwieldy, and require six horses: they should be made lighter with better springs.

The Irish cars are long cars with seats back to back and a well between; they carry six sitting and one lying in the well, seven in all. They are light and good, and require only four horses.

The transport required by the medical service in the field is as follows: —

	Irish Car.	Mules.
For each regiment of infantry -	1	4
Ditto, to carry chairs and litters		12

In addition, each division requires,

	Waggons.	Horses.
For reserve stores and comforts -	1	6
Medicines - - - - -	1	6
Also for stores — Spring carts -	2	4
Also general medical reserve stores *	10	60
Ditto spring carts - - -	2	4

Cavalry and Artillery in proportion.

* The amount of general reserve stores here given was for an army of 30,000. This item would of course vary with the strength of the force.

The P. M. Officer is responsible to the commander of the army for the thorough efficiency of his department in every respect; of this he must satisfy himself by personal and minute inspection.

Commissariat.

The commissariat is charged with the whole of the feeding of the army — men and beasts — as well as with the supply of fuel when it cannot be procured on the spot by the men themselves.

During the Russian war the rations issued to the troops consisted of 1¼ ℔. of meat, 1 ℔. of bread, besides portions of tea, sugar, rum and rice, per man daily.

A Crimean ox supplies about 200 rations at 1¼ ℔.; a sheep about 30 rations. At this estimate to feed an army of 30,000 men for one day, 150 oxen or 1000 sheep would be required. During the summer of 1855 the English army in the Crimea numbered 30,000 men, and it was supplied with fresh meat four times a week. Thus the weekly supply of animals for the feeding of the army amounted to about 600 oxen or to 4000 sheep.

The amount of land transport required by the commissariat to be constantly employed in the carriage of provisions and forage for feeding the army, 30,000 strong, when stationary before Sebastopol, was as follows: — 60 bread waggons of 4 horses each to carry 2000 ℔.; 178 carts, of 2 horses, 600 ℔.; total vehicles being 238, and 596 horses.

Supposing the same army to take the field and make an advance into the interior of the country, the estimate of land transport required was — 60 bread waggons, of 4 horses; 509 carts, of 2 horses, and 9193 pack animals; making a total of 569 vehicles, and 10,451 horses or mules.

When fresh meat is not to be had, salt pork or beef is issued; this would increase the carriage on a march, as the fresh meat carries itself, but the pork barrels require transport. Under these circumstances, as a general rule, the troops would have to make it out on bread or biscuit.

At the head of this department is the commissary-general. To each division is attached an assistant commissary-general, with one or more subordinates. A commissariat depôt is formed with each division where the cattle are penned — provisions and forage stored — a guard is furnished by the division.

In the Crimea the commissariat was charged with the custody of the following stores, viz. great coats, blankets, tents, boots, and a supply of entrenching tools for regiments, which were distributed on the order of the *quarter-master-general.*

It had agents at the different ports of the Black Sea and in the Bosphorus for the purchase of cattle, forage, &c; and a certain number of transports were placed at the sole disposal of the commissary-general for their conveyance.

Ordnance Department.

From the ordnance stores in Great Britain are supplied all the arms, ammunition, great coats, blankets, tents, boots, &c.; in short, all the *matériel* of the army, including guns, pontoon trains, entrenching tools, &c. In the field, however, the arms and ammunition alone remain in charge of the ordnance store keeper, who issues them on the orders of the *adjutant-general.* The pontoon trains and mass of the entrenching tools are given over to the engineer department; the guns, their carriages, shot, shell, and charges, &c. to the artillery.

Details of the land and sea transport and staff services will be found in another place.

The Soldiers not to be overworked.

But supposing the physical wants of the army to be amply supplied, there is another care which affects its preservation, as important as any,—with which a commander should constantly occupy himself, and in which he will oblige his officers, high and low, to co-operate with him,—viz. *to avoid overworking his men.*

It may be necessary for a short period to overtask the physical strength of the men for very important objects whose attainment appears immediate, but this must not be continued or the army will be destroyed; and although the certain attainment of the object

may compensate such a sacrifice, yet, where any doubt exists, the greater probability is that a general who so acts will lose both his object and his army.*

All useless fatigue must be spared the soldiers. They should never be kept under arms longer than is really necessary. At the end of a long day's march, the sooner the men are dismissed and engaged in lighting their fires and cooking their meals, the better. If an enemy is in the neighbourhood, delay until the advanced picquets and sentries are posted is unavoidable; but not a moment's extra delay should be occasioned by uncertainty as to the position to be taken up. The general should decide on this before the arrival of the army; and the staff officers should have clear instructions to guide its different divisions by the shortest line to the ground they are respectively to occupy. Useless marching and countermarching must be avoided. If the soldiers are in the habit of seeing orders given and afterwards reversed, which entail unnecessary fatigue on *them*, and betray indecision of mind in the giver of the orders, they lose confidence in their commander and are liable to become discontented.

The importance of cleanliness need not be enlarged upon in its relation to the health of the troops. This,

* See, in illustration of this, the note to Maxim 9, at the end of Chapter III., on the siege of Sebastopol.

as well as all sanitary regulations, and the choice (wherever it may be possible) of a healthy site for a camp,—although peculiarly within the province of the medical department,—should receive no less attention from the general and his officers than each of the other points with which the preservation of the army is connected.

Movement of an Army.

2. The army has to be forwarded to the place of battle.

The operation of forwarding an army includes its "Preservation" as above; and in addition, everything pertaining to *transport, combinations of movement, equipment, &c.*

The supply of the necessary animals, vehicles, and drivers for an army is in itself a great operation. This service was until lately part of the duties of the commissariat—it is now performed by the land transport department, which is presided over by a colonel on the staff with the title of director-general.

The estimated number of animals required to enable our army in the Crimea of 30,000 men to take the field with efficiency was upwards of 20,000.

Detail.

Each regiment of cavalry, estimated at 6 troops of 75 men, requires in the field —

	Pack mules.
For carriage of tents (1 mule to 3 tents) -	15
„ Portable forge - -	1
„ Hospital pannier - -	1
„ Veterinary surgeon panniers	1
For carriage of camp kettles, entrenching tools, picket posts, breast-lines, buckets, &c. -	15
„ Waterbags - - -	1
„ Pay-master and quarter-master - - - -	4
	38

Also for hospital marquee, 1 cart and 2 horses.

Each infantry regiment of 8 companies requires

	Pack mules.
For tents, 3 mules per company - -	24
„ Waterbags - - - - -	4
„ Hospital panniers - - - -	1
„ Armourer's forge and tools - -	1
„ Entrenching tools - - -	1
„ Paymaster, store and staff serjeants -	2
	33

Also for hospital marquee, 1 cart and 2 horses.

Engineer Transport.

In the Crimea there were eight companies of Sappers. They required

For stationery, books, instruments, &c., 1 cart and 1 mule to each company -	8 draft mules,	8 light carts.
Staff officers' effects -	8 „	8 „
Hospital supplies 1 to each company - -	8 pack mules.	
Tents, waterbags, &c., 3 to each company -	24 „	
	48 mules.	16 carts.

The engineer field equipment train belongs to the engineer department, and carries the engineer tools and stores.

The pontoon train is also in charge of the engineers.

Infantry Reserve Ammunition.

This is divided into the 1st, 2nd, and 3rd reserves: the 1st reserve is carried by the artillery; the 2nd and 3rd reserves by the land transport. The service is thus calculated: 1000 rounds infantry ammunition weigh 100 lbs.; the average load of a mule is 200 lbs.; each mule can, therefore, carry 2000 rounds. A six-horse waggon carries 16 cwt. or about 16,000 rounds.

The 2nd reserve, consisting of 150 rounds per man, is carried partly by mules, partly in waggons.

The 3rd reserve, at a convenient distance in rear of the 2nd, is conveyed in waggons.

The Artillery Transport.

The artillery transport is independent of the land transport corps except as regards the hospitals and

ambulance. For the service of the field artillery in the Crimea a train was formed at Woolwich for the conveyance of the field artillery and infantry *reserve ammunition* as follows: —

For field artillery reserve	257 horses.	39 waggons.
Infantry - -	475 „	72 „

Companies of foot artillery were attached to this train. The infantry reserve is only the 1st reserve as above stated, which must be carried close in rear of the troops; but if the army had advanced, mules would have been required for the purpose of carrying the ammunition over broken ground to the men, perhaps engaged with the enemy, where waggons could not go.

Land Transport. *

The organization of the *Land Transport* is divisional; each division of the army has a division of the land transport attached to it. Its intended strength was 173 European and 400 native drivers, in all 573. The average number of men in a division of the English army is 5,000. It will be seen hereafter that with a division of the French army of 10,000 men, the number of men employed in the field train or land transport duties are only 300.

* Now called the "Military Train," organised in battalions.

Sea Transport.

In the Crimea the army was entirely dependent on supplies brought by sea; at the head of this department was an admiral superintendent, who had the control of all the transports in the eastern waters.

At each principal port there was a naval officer as "captain of the port." The duties of a captain of the port are to superintend all embarkations and disembarkations in concert with a quartermaster-general's officer, who is the mouthpiece of the commander of the army; to regulate the anchorage of the different vessels in the harbour; to keep the commander-in-chief acquainted by a daily return of the number and capacity of vessels which may have arrived or departed during the preceding twenty-four hours.

If an expedition by sea be determined on, the captain of the port must furnish information at a moment's notice of the number, names, and capacity of the ships he proposes to allot for the conveyance of a given number of men, horses, guns, provisions, and medical stores, together with the order in which they will load (in a small harbour like Balaklava, this is very essential); and the quartermaster-general having made his distribution according to the information supplied, the captain of the port, in conjunction with the officer of the quartermaster-

general's department who superintends the embarkation, must carry out that distribution to the letter.

In such a service everything depends on the degree of cordiality and accord which exists between the naval and military authorities.

Combinations of Movement.

Combinations of movement may be said to embrace everything above mentioned, and in addition, every possible military detail which has not been mentioned, except such as relate to actual collision with the enemy.

The March.

Large armies can seldom march by the same route (although instances have occurred, particularly during the Russian campaign of 1812, when two vast armies, Russian and French, were marching on the same road, the one retreating the other pursuing).

The different corps must in general march by different routes. If retreating, their march may be convergent or divergent according to circumstances; but in advancing towards an enemy, the march of the several divisions or corps of an army must always be convergent, and their concentration effected at a safe distance from the enemy. Accuracy in this respect is vitally important; the fate of a battle, of a campaign, even of a dynasty, have often depended on the successful and accurate con-

centration of scattered bodies of an army; and it should be impressed on all officers in command of detached bodies, that whatever may be the difficulty of obeying orders for a rendezvous, nothing but the well-ascertained impossibility of executing them will be received as an excuse for non-fulfilment.

The conception of, and orders for, such combinations emanate from the general, and call for the highest qualities of a commander; but for their accurate fulfilment he must very much depend on his subordinates, and most particularly on the general staff of the army.

The whole of a general's combinations may be frustrated and his army exposed to defeat by the want of clear comprehension by a staff officer of the orders of which he is to be the medium of conveyance to the different columns; or the same danger will arise from a loose system of marching, resulting from want of proper discipline and organisation. Suppose, for instance, that a regiment meeting with an obstacle in its march along a road, improperly breaks into file to avoid it. Now "it is proved that the defiling of one battalion on the march, even if done with as much promptitude as is practicable on such occasions, will cause a delay of ten minutes; one such obstacle therefore, if not passed without defiling, would delay a brigade half an hour." *

* See "Standing Orders of the Light Division," p. 14.

If, then, improper looseness of marching in passing one obstacle cause so much loss of time, and, as a consequence, extra fatigue, to the men of *one* brigade; the delay occasioned by many obstacles to a body of troops composed of many brigades might seriously imperil the safety of an army. Slowness of marching, when estimated for in the calculations of the general, is a great drawback to the effective force of an army; but slowness of marching, when not estimated for, may be fatal. Such columns as keep their time at the point of concentration may be beaten by an enterprising enemy before the laggards come up, who in their turn on arriving are beaten in detail.

In this view any distance an army may have to traverse should be calculated, not in miles, but in the number of marches; and in order to estimate that number correctly, the general must have accurate information of the state of each road by which his army is to advance. For this information he must depend on the officers of his staff; or, should the enemy's patrols be pushed too far and be too vigilant to admit of those officers making personal reconnaissances within the sphere of the enemy's action, then on the best information possible to be obtained from country people or spies; using great caution in winnowing the true from the false in their reports.

The Training to March.

The *rate* at which an army is in the habit of marching without overfatigue, depends on the bodily health and strength of the men composing it, and not only on those qualities, but also most particularly on the degree in which their powers of marching have been exercised and increased by constant practice or "training." Napoleon said that if two armies were equal in all things except numbers and rates of marching, their relative values would be found, not by comparing their numbers, but by comparing the products of their numbers and rates. Thus it was his opinion that an army of 10,000 men which could average twenty miles a day, would produce as great an effect on the success of a campaign, as one of 20,000 which marched only ten miles a day.

This being undoubtedly true, ought we not to give more attention to the subject, and to endeavour by all means to develop the powers of the soldier in this respect? Our recruits join just at that age which is most favourable for training the body to the endurance of fatigue without the risk of injury. Why, with the example of the Duke of Wellington's splendid light division before our eyes, should we be satisfied with anything which falls short of that standard? That division was organised and trained originally under Sir John Moore.

As a result of their system, look at the march to Talavera. Napier relates how they crossed the field of battle in compact order and immediately took charge of the outposts, after having marched sixty-two miles in twenty-six hours (leaving only seventeen stragglers behind) in the hot season;—each man carrying upwards of fifty pounds' weight; which weight may be best appreciated by considering it as that of a good-sized portmanteau, well packed.

Those were indeed "soldiers," they were trained to some purpose. Why should not we emulate them? They were men of the same stuff as our soldiers of to-day. We have not degenerated in courage or pluck certainly, and not in thews and sinews; and morally there need be no hesitation in asserting our superiority. All our soldiers who are in health should be in constant "training" in the sporting sense of the word, though not of course over severe.

Weight carried by Soldier.

The equipment of the soldier is closely connected with his powers of marching with reference to the weight he carries. That weight must be reduced to a minimum, regard being had to perfect efficiency. The greater the reduction of all unnecessary weight in arms, accoutrements, and general equipment, the greater the margin left for the carriage of his provisions by the soldier. The French soldier in heavy

marching order, with his piece of *abri* tent and his provisions, carries about sixty-eight pounds; but he is a marching animal, which the English soldier, from want of training, is not. — On the Kertch expedition, in the eleven miles' march from the landing place to Yenikale, our men fell out by sections—the French did the same; ours, however, from fatigue, — the French to pillage; and the same little men with their big loads were soon to be seen going to the front at a run, with the voluntary addition to their burdens of poultry, baskets, and even in some instances looking glasses or pictures.

The French soldier frequently carries eight days' rations — ours seldom more than three: with a large army what an important difference in the amount of transport required by the two! and how many operations become possible in the one case which are not so in the other! But in laying down rules for armies of different nations the characteristics and habits of the men composing them must not be lost sight of. The sort of food the French can work upon for eight days would not probably suit the English.

The French soldier is kept in constant training, but he is overweighted, and the machine soon wears out: his officers say that at thirty-two he is completely "*usé*," but there is plenty more of the raw material. With us, on the contrary, the raw material is not

plentiful; and when worked up into the trained soldier, it is the most expensive as well as the most valuable article of the description in the world. Our policy then is to husband what we have got, and not to overtask the strength of our men; but there is a *medium;* and with a weight of fifty-six pounds, if properly trained to march, they ought certainly to accomplish as much as the French with sixty-eight pounds without suffering from the habit.

The equipment of an army includes its being provided with pontoon trains to bridge rivers, and entrenching tools to clear roads or to throw up works for the purpose of strengthening a position or post, and its possession of a siege train to reduce fortified towns.

Secrecy.

Secrecy is a main condition of success in the execution of a military plan. The greatest captains have made a practice of keeping their designs strictly to themselves until the very moment of execution. Marlborough was conspicuous for his reserve in this respect; and as examples of secrecy, as well as of his wonderful genius in the employment of moral as distinguished from physical agents, his great march to the Danube in 1704 previous to Blenheim; and the manœuvres by which he deceived Villars and forced the formidable lines constructed by that marshal to cover the French frontier in 1711 are recommended

to the careful attention of the student. Both of the above operations are models of strategy, manifesting in the highest degree all the qualities of a great captain.

At the present time, when every camp swarms with "Special Correspondents," whose particular business it is to worm out the plans of the general to furnish pabulum for the insatiable maw of curiosity at home, secrecy is more than ever necessary.

Treatment of Inhabitants.

Another object of attention closely connected with the wellbeing of an army in marching through a neutral or hostile or even friendly country, is the treatment of the inhabitants, who will either be friendly or hostile according to the behaviour of the army. If the men are allowed to rob and to pillage, the inhabitants will remove with all they can carry away beyond reach, and after the proceeds of a few days' robbery shall be expended, difficulty will be found in getting supplies. It is the duty of every officer by all the means in his power to prevent anything approaching to ill-treatment of the country people. It is the habit of an English army to pay for what it consumes even in an enemy's country; and it is true policy. The contrary practice prevails among the French. On the expedition

to Kertch the inhabitants soon learned to distinguish between the two, and the French were obliged to come to the markets established at the English camp to purchase supplies, for the inhabitants would not go near them.

The words "in fighting order" signify, moreover, the care and preservation of arms, accoutrements, and ammunition, and the necessary measures to insure a sufficient supply of the latter being always at hand to replenish the men's pouches when required.

Everything above stated, besides many other considerations, must enter into the problem a general has to solve as given above; and it is not enough that his orders should be well-conceived and fitted to attain their object. He must be provided with an executive on whom he can thoroughly rely to carry out those orders in the most complete and expeditious manner.

The Staff.

The chief of the staff is the head of that executive; and under him, the Adjutant- and Quarter-master-General are the heads of its two branches or departments.

Chief of the Staff.

The chief of the staff superintends and directs all the branches of the service, and is responsible

for the thorough efficiency of the whole mechanism of the army.

Adjutant-General.

The duties of the Adjutant-General relate to general discipline. He regulates the daily duties of the force, and at a siege details the working parties on the requisition of the Commanding Engineer. He orders the distribution of arms and ammunition, whose *custody*, however, in store is entrusted to the *Ordnance* department.

Quartermaster-General.

The Quartermaster-General has very varied and arduous duties. All the details of the movement of troops by land or sea, as well as all connected with camp or quarters, come under his superintendence.

His officers are charged with the duty of thoroughly exploring the country in which the army is operating; of placing and maintaining in good repair all the roads by which it may advance or retire; of reporting on the best spots for crossing rivers and for the construction of *têtes-de-pont;* as well as on the existence of fords, which they must mark out, if to be used; of making themselves acquainted with the climate of the country and its effects on the state of the roads, water in the rivers,

&c. They should know wherever in the neighbourhood of their line of march it may be possible to lay hands on horses, carts, boats, provisions, forage, &c., and to what extent. They precede the army in all its marches, take up billets in towns, or mark out the ground for encampment; and as such camping-ground must be likewise the most favourable position for battle when an enemy is in the neighbourhood, it is seen how much depends on the military knowledge, quickness of eye, and activity of these officers. In short, the general makes use of them as eyes and ears, and he must be able entirely to depend on the accuracy and completeness of the information it is their business to supply.

For performing efficiently the duties of a staff-officer, common sense and good judgment, combined with great mental and bodily activity, are the principal requisites.

But the greatest natural genius for war in the world, if placed suddenly at the head of the quarter-master-general's staff of an army, would be utterly at a loss and nearly as helpless as an infant, unless previous study of the science of war and practical acquaintance with its working details had taught him on what points to bring his genius to bear.

The above naturally suggests an inquiry into

the sort of education which it is desirable for officers in general, and for the staff in particular, to have, before entering on their active duties, so as to enable them to perform those duties in the manner most beneficial to the country.

Education of Officers.

Every great military power has organised the education of its officers into an institution of the state. Even America, which has no standing army worth mention, has the wisdom to provide a scientific professional education for all her officers, and by her establishment at West Point to give such an education to numbers of her citizens, as (though not ostensibly in the army) would cause them to be found excellent trained officers in case of need. In England alone the professional education of officers previous to joining the army is purely voluntary.

Now it will be conceded on all hands that the young soldier must receive a sound professional and practical training, either before or after he enters the ranks of the army.

Is it likely that he will receive such a training after joining his regiment? It is to be feared not, though the very much to be commended system of large camps will oblige him to learn more of the mechanical part than heretofore. As a general rule

the officers of the British army are ignorant of the higher details of their profession. They have never been taught or encouraged to *think* on such subjects.

Physically the most active and fearless race in the world, they find a vent for their exuberant animal energy in field sports, in the prosecution of which they voluntarily undergo an amount of fatigue that would knock up an Irish "navvy." Confinement and study are irksome to them. The youngster, on joining, finds himself thrown into a set of extremely agreeable good fellows much older than himself, the force of whose example on all minds but those of a very strong stamp is almost irresistible; and he enters with all his heart on a life which appears, at first sight, so "particularly jolly." To combat this evil, examinations for promotion were instituted; but these are an admitted failure. There has also been some talk of appointing officers as instructors at different stations; but this would be ineffectual, except as an aid to previous training and an inducement to further study, for the attendance would of course be voluntary; in regiments as now constituted you have to deal with men whose habits are formed, and the "*vis inertiæ*" of an habitually idle life is hard to overcome.

What we want is that our young officers should have military ideas and military training. It is

of little importance to the State that the man who leads his regiment bravely should be a good classical scholar or general historian; but it is of importance that he should be versed in military history, that he should be able to direct his men in strengthening a post by field-works, that he should have a good eye for ground, and that he should be able to speak other languages than his own; because such attainments add immensely to his value as an officer.

It is vain to expect that, as a general rule, young men entering the army at the age of seventeen or eighteen shall be *bonâ fide* educated up to the point required by many advocates of general education. A fondness for reading and thirst after knowledge are generally, by a blessed Providence, found to accompany a sickly constitution and weak body in the young; but the nature of the healthy and vigorous is to dislike those pursuits which keep them shut up in schoolrooms from the sunshine and activity it is their instinct to adore. Thus it is found that the bodily peculiarities which conduce most to mental culture are those which unfit their possessor for a life of activity and endurance, while the bodily qualities which are invaluable in a soldier are antagonistic to abstruse study.*

* Not necessarily so, however; and this is a popular error which should be opposed. It is the habit with a certain class to consider that no man is good for much who has not mathe-

There are doubtless many exceptions; but this is the general rule, and it is vain to expect to alter it.

Let, then, the State leave the general education of the officer on the same voluntary footing whereon it stood until the last few years; but let it insure his having some military training by taking that training into its own hands. This might be effected by obliging all officers before appointment to pass six or eight months at a central military school, where they should receive practical instruction in field fortification, surveying, out-post duty, reconnoitring, &c., all based, however, on a good elementary teaching of the theory of the art of war, commonly called "Strategy and Tactics."

It should be required that the *élève*, at the time of his coming under the charge of the State, should bring with him such an amount and such description of knowledge as will enable him to profit to the utmost by the practical training to which so short a time must necessarily be allotted: let the raw material be left to private enterprise to work up to any point of fitness the State may prescribe before taking it in hand to model it into the more perfect form it is destined to assume. It will be found that the preparatory education will embrace a fair amount of general knowledge.

matical talent; but another large class goes as far in the other extreme, and is inclined to look on an officer with suspicion because he is a mathematician, and for that reason alone.

As regards the Staff of the army there are numerous advocates for a highly scientific education as a necessary qualification. This may be carried too far. Let it be scientific to a certain extent as regards professional subjects; but let not higher mathematical attainments (for example) be *required* than are capable of practical application to military duties.

Many men who are first-rate officers have not that peculiar structure of the brain which favours mathematical excellence. A certain organisation of the nervous system is quite as essential to the formation of a good officer as that of the brain. Without the first, the possessor of the greatest intellect would doubtless, become, if he chose, an admirable General in his closet; he might be an excellent war minister; he would never make a General in the field, or be worth his pay as a soldier of any rank.

If it be desirable, as doubtless it is, that we should have officers capable from their scientific attainments of conducting delicate *geodetical* observations, let us follow the example of the French and have a separate topographical branch of the Staff, composed of scientific men.

There are brilliant exceptions; but it will be found, as a general rule, that the minds of such officers partake more of the abstract than the practical, and that they would be more usefully employed in con-

ducting those observations than in ranging a division in order of battle. Their gifts are different.

But although common sense, coolness, a quick eye, good nerve and judgment, a good seat on a horse, and activity of mind and body are qualities indispensable to the formation of a good Staff officer (and they are not far to seek among English gentlemen); their possession would be of little value at a pinch in a military point of view, without habits of reflection on military subjects and practical acquaintance with the working details of the profession.

The object of all military education, then, will be best secured by the judicious combination of theory and practice.

French System.

In the French army all the departments which have been above mentioned are centralised into two, viz. —

Adjutant-General, Quartermaster-General, Military Secretary.	All comprised in the *Etat Major*, which is a distinct corps.
Medical, Commissariat, Land Transport,	Comprised in the *Intendance.*

No officer is eligible for the corps d'Etat Major who has not passed through the Staff school, after which

he serves for two years with both infantry and cavalry.* He is then of the Etat Major permanently, which knows no distinction of departments. It should be remarked, however, that there is a special topographical department attached to the headquarters of an army for the purpose of making maps. The General-in-Chief of an army has his general Staff, consisting of a Chef d'Etat Major, who controls all the departments of the army; and a certain number of subordinates holding specific rank in the corps d'Etat Major. In like manner a General of division has his divisional Staff, composed of a Chef d'Etat Major and subordinates. The Generals of artillery and engineers are similarly provided.

It is evident that business must be simplified by this unity of the staff. In the English army if a soldier has to be equipped his arms and ammunition are obtained from the *Ordnance*, but not until an order for their issue has been procured from the *Adjutant-General;* his great coat, blanket, and boots must be applied for to the *Commissariat*, but the order in this case for the issue must come from the *Quartermaster General.*

The head of the Intendance is responsible for the due provisioning of the army, for the efficient supply

* The artillery and engineers have special schools; and the staff officers of those services are artillery and engineer officers who do not belong to the corps d'Etat Major.

of surgeons, medicines, and comforts for the sick, as well as for the whole of the transport.

Each division of 10,000 men has its own branch of the Intendance, which accompanies it everywhere. This branch is composed of *infirmiers* or hospital attendants, bakers, butchers, and field train or transport. These non-combatants number 450 men, of whom 300 belong to the field train, the other three classes making up the total. The number, 300, engaged in the field-train service must appear small, seeing they have to carry provisions, medical stores, ambulance, &c., for 10,000 men; but the French soldier carries his own tent, and rarely less than six days' provisions, which lightens the transport materially.*

There is no regimental hospital system properly so called: the medical officers are all under the Intendance, and are what we should call Staff surgeons. A surgeon and assistant-surgeon are attached to each regiment in the field; but they treat none but the slightest cases, or such as absolutely demand immediate remedies. The sick and wounded are sent to the divisional hospitals which are under the immediate charge of the *Comptable,* whose peculiar business it is to maintain an ample supply of everything that can be required.

* These are the numbers kept up in time of peace; when in the field some addition is made to the number of non-combatants attached to each division.

The amalgamation of so many branches in the French army, under one head, secures greater unity as well as promptitude of action than can obtain with us, with our multiplication of independent departments, the heads of which are sometimes jealous of their dignity and more intent on exacting a rigid etiquette in the manner of addressing them, than eager to forward the public service.

This digression over, we will now suppose that the difficulties of the march have been successfully surmounted, and that the different columns have effected their concentration in the neighbourhood of the enemy, who is now to be approached, and beaten if possible.

Outpost Duty.

The safety of an army in an enemy's country materially depends on the manner in which the outpost duty is performed. The outposts, picquets, and advanced sentries are the watch-dogs of the army, whose peculiar business is, to detect and give timely warning of the approach of an enemy; as well as every circumstance which may appear to threaten its safety. An officer in command of an outpost should invariably act as if the safety of the whole army depended on his individual vigilance, and he should impress the same feeling of responsibility on the mind of every one of his sentries.

The advanced guard of a column of march serves the same purpose for that column as the outposts serve for an army in position.

Choice of a Position.

The next consideration is the choice of the position in which the army is to fight; it does not fall within the limits of this chapter to enter minutely into the circumstances which must determine such a choice. A few general remarks must here suffice. If a General advances to attack an enemy, the nature of the position he takes up must be regulated by that in which he finds his enemy posted, and it is probable he will have to attack at a disadvantage as relates to ground; should he consider the enemy too strongly posted to be successfully assailed, he must manœuvre to turn his flanks or to wile his opponent from his vantage ground, and he must look out for an opportunity to attack him while making a change in his dispositions; but he must be careful, in his eagerness to bring on a battle, that he does not expose his line of retreat which is also his line of supply; in other words, he must always take care that the position of his army covers his line of operations.

In general terms a position may be said to cover such line * when the troops which occupy it can reach

* The same definition applies to any place or point.

any given point on that line in a shorter time than the hostile army requires to reach the same point. In this respect an invading army always operates at a disadvantage. For the defending force being in its own country can generally retire in several different directions, or it has several lines of retreat; while the invader usually has but the line by which he has advanced; he dares not operate much to one side or the other of that line, for in so doing he would expose it to the enemy, who might thus interpose between the invading army and its point of safety, or, in other words, might thus intercept its communications; to regain which the invader must either fight a battle in a position where defeat would be ruin, or he must make a long détour by forced marches, having thus lost his time and discouraged his soldiers.

The Attack.

The General having placed his force in a proper position, has now to attack.

Drill.

The basis of all excellence in bringing an army into action is *drill.* No man can be a General without being perfectly master of the art of handling his troops of all arms.

All movements within reach of an enemy must be made in that particular manner which will enable the

line of battle to be formed with the least possible delay. Much may depend on the formation in which the General decides on attacking any particular point, and it is obvious that his troops must be capable, from being thoroughly drilled and exercised, of carrying out his dispositions quickly and accurately. Unquestionably of two armies equal in all other respects and equally handled by their commanders, that one must win which can manœuvre with the greatest rapidity and precision. For instance, at a critical point and moment the loss of a battle might be caused by brigades, advancing to attack in line, crowding in and overlapping one another, thus causing serious confusion and diminution of front; while, on the other hand, the involuntary divergence of the same brigades would leave gaps in the line which a skilful enemy would not be slow to avail himself of.

It is not supposed that in the smoke and turmoil of a battle movements can be executed with quite the same regularity as at a review, but a closer approximation will be made to that desirable object, the better the officers and men are drilled. Yet in giving all due importance to the art of moving troops, it must be remembered that, although no one can be a General without possessing that art in a high degree, it is only one of the many tools with which he must work, and that a man may be a perfect *drill*

in the literal meaning of the term, without having an idea beyond the mechanical part of it.

Frederick the Great paid more attention to mere parade drill than any modern General, and he undoubtedly owed many of his great victories, as well as on several occasions his escape from serious disaster, to the superiority of his troops in this particular over those it was his fortune to encounter. Had the armies opposed to him been equally well drilled with his own, though he must always have deserved the name of a great General, he would hardly have left the reputation of a successful one.

Skill in using Weapons.

The skill possessed by the soldiers of all arms in the use of their particular weapons is evidently another vital ingredient of success. This also depends on exercise. The modern improvement in small arms renders it probable that the fire of the infantry will in future form the most important element in the decision of a battle. Until lately the small-arm practice of our army has been a farce. The improvement which has taken place is due to the late commander-in-chief, Lord Hardinge. His school of musketry is admirable, and there is little doubt that its good effects would have been very apparent had the war lasted another year. It has been said that our minié rifles did great execution at Inkerman; but

if we compare the number of rounds expended by us in that battle with the number of men hurt on the side of the enemy, we may then judge what results would be achieved if we gave our soldiers such a training as should insure the third only of their shots taking effect.

The just combination of the three arms, infantry, cavalry, and artillery, is a problem of high tactics which will be considered hereafter; on the solution of which the fate of a battle must hinge.

It may be remarked, however, that the force of cavalry is in general imperfectly understood.

Cavalry.

The moral force of infantry against cavalry is infinitely greater than the physical. The charges executed by cavalry at reviews up to the faces of squares to receive a volley which is the signal of "threes about," is an injurious practice. The horses soon learn they are not intended to *go in.*

Instead of this, it would be far better that the cavalry were exercised in charging a square of dummies and in riding over them.

But no formation of infantry can resist the shock of horses ridden, as English dragoons do ride, in earnest. Who that has read of the light cavalry brigade at Balaklava, but believes implicitly that that splendid chivalry would have swept away

any infantry formation as foam before the hurricane. Many saddles would have been emptied doubtless, as many were; but the survivors would have got in, — as the survivors *did*, — and there would then have been short work of the infantry.

Moral Considerations.

The foregoing presents a short and imperfect consideration of the material agents which a General employs in war. The moral agents have not been touched upon; they exist in the mind of the great commander. The most urgent are, knowledge of human nature and skill in influencing men through their fears, passions, interests, or habits. They cannot be better described than in the following words of Napoleon, which will also form a fitting termination to this chapter: —

"Achilles was the son of a goddess and a mortal. It is the emblem of the Genius of War. The divine part of the art is all that which is derived from moral considerations of the character, talent, and interest of your adversary; of the opinion and spirit of the soldier, who is strong and victorious, or feeble and vanquished, according as he believes himself to be either; the earthly part consists in the arms, entrenchments, positions, orders of battle, everything in short which relates to the combination of material engines."

DEFINITIONS.

The "*Theatre of War*" is the whole area of country in any part of which the hostile armies can come into collision with one another.

The "*Base of Operations*" of an army is the point, line, or district from which it starts, and from which all its reinforcements and supplies proceed when it is committed in a campaign. It may be a single town; it may be a frontier line of any length; or a line of sea-coast, if the army possess the command of the sea; or it may be a district of country having breadth as well as length. Whatever be its nature, it must be such that the army retreating upon it in case of disaster shall, on reaching it, find succour and safety.

The tactical and strategical base of an army is the same. Defeated in a battle, it must retire in some direction; and it is plain that the only safe retreat is that which leads direct to its base. For if the victorious army should interpose between the defeated army and its base, the reinforcements and supplies of the latter would be cut off, and the probability would be the entire disorganisation and

dispersion of the defeated army, — a probabiltiy to be guarded against with the most anxious care.

It is certainly quite possible that an army which has been cut off from its base may fight a victorious battle, its face towards its natural point of retreat, with an enemy who, although he has interposed between the army and its base, may still have his own line of retreat secured. But in such a case the army fights a battle for existence whose loss would be total ruin, while the enemy fights in comparative safety.

The "*Line of Operation*" of an army is the line by which it advances from its base into the theatre of war. It must not be supposed to signify one road only; it embraces every road by which the fractions of the army march. A large force may thus include a considerable breadth of country in the march of its columns. When all the marching fractions are in communication with each other, the army's line of march is called a "single line of operation." But if the fractions of an army marching towards the same point are unable to communicate with each other, either by reason of distance or of any natural obstacle, the army then has as many lines of operation as there are separated fractions.

The "*Communications*" of an army, as the name implies, are the lines by which it communicates with its base from any point to which it has advanced

in the theatre of war,—along which its reinforcements and supplies must pass to reach the army, and by which it must retreat in case of disaster; and the definition applies equally, whether the army occupies an extended strategical front, or is united on a field of battle.

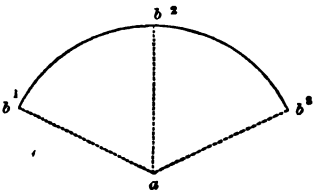
In general the communications are along the line by which it has advanced, or along its line of operations, but not always. This will be made clear hereafter.

"*Interior Lines of Operation*" are the lines by which a force, of whatever size, marches to unite at any given point, provided those lines are shorter than any by which an enemy can unite an equal force at the same point.

From this it follows that lines are exterior or interior solely with reference to those of an enemy. Without the presence of an enemy on the theatre of war, no lines however circuitous would be exterior; none however direct interior.

The terms of the definition are subject to modification from the relative circumstances of the armies. For instance, if a General in command of an inferior force to that of an enemy has been able to unite his whole force at a given point, while his enemy has there been able to unite only a fraction of his force, that General has moved on interior lines, notwithstanding that his united force may be numerically weaker than the fraction of the enemy.

The accompanying diagram illustrating the simplest case that can arise, may serve to fix the meaning.



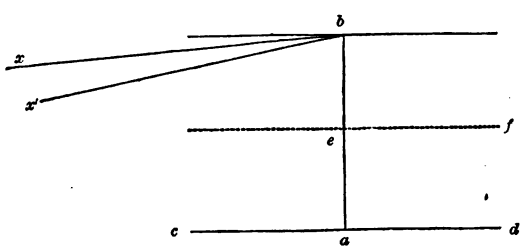
A is an army occupying the position a, in the centre of a circle, of which b^1, b^2, b^3, is part of the circumference. B is an army whose fractions are at b^1, b^2, b^3. Suppose the radius of the circle, and the distances $b^1\ b^2$, $b^2\ b^3$, to be all equal. Now, if A marches against B's centre fraction b^2, no advantage is gained, as the two extreme fractions of B can arrive at b^2 as soon as A; and both armies are united at b^2 at the same time. But if A marches from a on either b^1 or b^3, A will arrive at either of these points united in a time in which B is able to unite only two of its fractions at the same point. A has then moved on "interior lines."

It is not the mere distance in miles which an army must march which decides the question of exterior or interior lines; it is the number of days' marches represented by that distance, which must be calculated on the data explained in the introductory chapter.

This definition applies equally to the movements

of armies on a field of battle. The first are called "interior strategical lines," the last "interior tactical lines."

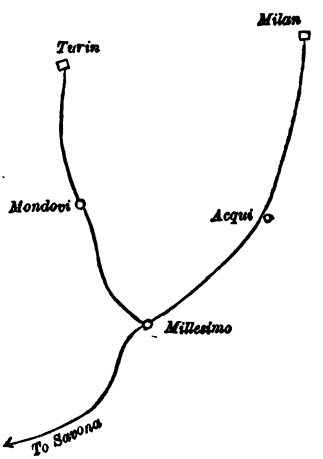
An army is said "*to cover a certain line or district,*" when it is able to reach every point in either in a shorter time than an enemy requires to reach the same point. In this case the army covers or protects the line or district directly. Two armies, A and B, are at *a* and *b* respectively; *e*, the middle point between them. A evidently covers directly every point in the line *c d*, and in rear of it, from the attacks of B; A likewise protects directly every point in rear of the line *e f*, because the distance of



such point from *a* will be less than from *b*. For distance substitute the number of marches represented by that distance, calculated on proper data, and the illustration applies to any configuration of country. But A will also protect indirectly any points, *x*, *x'*, whose distance from *b* is greater than that of *a* from *b*, provided B's line of retreat necessarily passes through *b*, — because in this case if B

moved to x, a being nearer to b than x to b, A could cut off B from his line of retreat.

Example.—The Austrians and Piedmontese, in 1796, showed themselves ignorant of the manner of indirectly protecting their territories. After the battle of Millesimo where Napoleon defeated their united armies, the Piedmontese retreated in one direction to Mondovi to cover Turin; the Austrians in another to Acqui to cover Milan. They would have effected both these objects if both armies had been united at either of the above two places.



Had they been united at Mondovi, they would have covered Turin directly and Milan indirectly. Napoleon could not have reached Turin without first

defeating their united army, and he dared not have marched on Milan leaving a superior army close to his line of communication, viz. the route to Savona. If the armies had been united at Acqui, the reverse reasoning holds good. As it was, he beat them in detail with an army very inferior to their united force.

CHAPTER I.

THE PRINCIPLES OF WAR.

THE whole science of war may be briefly defined as the art of placing in the right position, at the right time, a mass of troops greater than your enemy can there oppose to you.

The leading principle in war, then, is — to use words slightly different —

Principle No. 1. *To place masses of your army in contact with fractions of your enemy.*

There are two secondary principles.

Principle No. 2 teaches the particular manner in which the leading principle is to be applied so as to inflict the greatest possible amount of injury on your enemy : it is as follows : —

To operate as much as possible on the communications of your enemy without exposing your own.

Principle No. 3 points out the mechanical manner of operating so as to apply Principles 1 and 2, and is ; — *To operate always on interior lines.*

Every true maxim in war can be deduced from the above given principles — it being of course understood that they are to be reversed in speaking

of the operations of the enemy; or, in other words, that an enemy is to be prevented from applying them at your expense. As thus, care must be taken, 1st, to prevent the enemy from bringing the mass of his force in contact with fractions of your army, or large fractions in contact with small ones; 2nd, to prevent the enemy from operating on your communications without exposing his own; 3rd, to prevent his moving on interior lines.

These three principles supply an infallible test by which to judge of every military plan; for no combination can be well conceived, no maxim founded in truth, which is at variance with them.

Plan of Campaign.

In framing a plan of campaign a general must take into consideration the following elements: —

1, The political situation of the belligerents;

2, The configuration of the theatre of war;

3, The distribution of the hostile forces;

4, The relative value of those forces.

As regards No. 1, it may easily be conceived that political circumstances may hold out an inducement to a certain mode of operation which in a purely military view is not the most advantageous.

Example. — In 1756 Frederick the Great threatened by a powerful coalition of which Austria was

the heart, and whose extent he guessed although he did not absolutely know, took the field against Austria, the only important member of the confederacy which was prepared for war.

Frederick's hereditary dominions consisted of the Electorate of Brandenburgh. He had lately acquired Silesia by conquest. A glance at the map will show that Saxony, whose Elector favoured Austria and possessed an army of about 18,000 men, divides Brandenburgh on the south from the Austrian province of Bohemia, and that Silesia divides it on the south-east from the Austrian provinces of Bohemia and Moravia.

All military considerations seem to have combined to tempt Frederick to march upon Vienna, the heart of his adversary's power, through Moravia, and thus to end the war by one great stroke.

Frederick had 100,000 men; the Austrians only half that number, of whom 30,000 were in Bohemia, while 20,000 were in Moravia blocking the road to Vienna.

By assembling his whole force at Neisse in Silesia Frederick would have threatened both provinces; and if, as was probable, his attitude at that place prevented the junction of the two Austrian armies in either province, he could have marched suddenly on the 20,000 men in Moravia, and have overwhelmed them before they could be joined by

the Bohemian force: thus applying Principles 1 and 3.

It may be argued in reply, Why could not the Austrians have left open the road to Vienna and have united their whole force in the north-east corner of Bohemia in readiness to act against Frederick's communications as soon as he had committed himself in his advance on Vienna, — a similar course to that which has already been prescribed for the adoption of the Austrians and Piedmontese to arrest Napoleon's advance in 1796? But the cases are widely different. Napoleon's army was inferior — Frederick's greatly superior. The possession of Milan or Turin by Napoleon would not have terminated the war, and he would have had a superior army on his direct and only line of retreat, intercepting his supplies and reinforcements from France.

At Neisse Frederick was only twelve days' march from Vienna. Arrived there, he would in the supposed case have found no force to oppose him, unless it was one hastily assembled, unorganised and ill-disciplined. He would probably have dictated a peace at the gates of that capital; and it would have little concerned him that an army of 50,000 Austrians lay on his homeward route.

These were the apparent military advantages of a bold march on Vienna. It may be thought

that political considerations equally prescribed that course. But Frederick thought otherwise. He feared to leave far on his right rear and close to his hereditary estates a hostile Saxon army which, although small, might become the nucleus of one more powerful.

If he failed in his enterprise from any one of the numberless chances of war, Saxony unconquered would remain an Austrian ally; on the other hand Saxony conquered would become a Prussian bulwark against invasion from Bohemia; her population would recruit his armies, her revenues would swell his military chest, her resources would aid in the formation of his magazines; — all of which really resulted from the invasion of Saxony which he determined on in accordance with the above considerations.

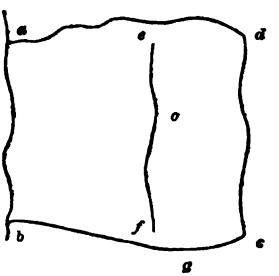
As regards No. 2, the configuration of the theatre of war will prescribe boldness or prudence according as it presents facilities for the greater or less application of the principles of war.

The nature and course of the boundary lines must determine the choice of the base of operations; and the nature and course of the great natural features (such as mountains, rivers, &c.) which intersect the theatre, as well as the distribution of hostile fortresses and the nature and direction of the principal roads, must all be taken into account in selecting the

part of the base from which the "line of operations" may start with the greatest advantage.

For instance, let the figure *a b c d* represent the theatre of war:

If *a b*, formed by your own frontier, be the only boundary line in your possession, the choice of a base



is limited to some part of *a b*, and your line of operations must start from some point in your selected base. But if *b c* be likewise in your possession, being either formed by your own frontier or that of an ally, you may choose any part of *a b* or of *b c*, or a part of both, as your base; and your line of operations may set out from any part of your selected base you may consider the most advantageous.

Let us suppose that *e f* is the course of a great river, or of a range of mountains intersecting the theatre of war, and that your object is to act against some point *o*.

Supposing other circumstances to be not unfavour-

able, it will clearly be your interest to select as your base the part of *b c* between *f* and *c*, and to start your line of operations from some point, *g* (the nearer to *f*, the better), as by doing so you not only turn the obstacle *e f*, which would have presented a barrier to your progress had you operated from any point between *a* and *b* or between *b* and *f*, but you can employ that obstacle as a protection to one flank of your army while marching from *g* towards your object, *o*.

No. 3. The distribution of the hostile forces.

It may be that your enemy's forces are too much disseminated, and do not mutually support each other.

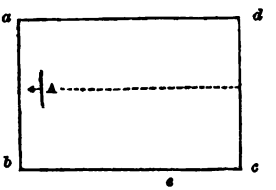
If your army is united, you will in this case have an opportunity of applying Principles 1 and 3 at his expense. By operating on the interior lines which the distribution of your adversary affords you, you may march against one of his separated fractions with your whole force, and after destroying it, proceed to the next, and so on; you will thus defeat them in detail by bringing the mass of your army in contact with successive fractions of your enemy. Principle 3 indicates that the hostile fraction which you should first attack is that on one of the flanks, since it will take the enemy double the time to concentrate his whole force on either flank, that would be required to effect his concentration on the centre.

As an example of this may be cited the plan of campaign drawn up in 1793 by Carnot, when minister of war to the French republic, for execution by the French armies. A powerful coalition threatened France with invasion at seven different points, extending from Strasbourg on the French right, to Dunkirk on the left. When Carnot assumed the direction of affairs he found the French force frittered away into eight small armies, seven of which were opposed to the several superior armies of the coalition, while the eighth formed a reserve. Thus the French were inferior at every point of contact. Carnot soon changed this state of affairs. He employed the army of reserve in reinforcing the French corps on the extreme left opposite to Dunkirk. These two, united, attacked and defeated the hostile army at that place, passed on to the right and, united with the next French force in that direction, defeated the next hostile fraction, and so on to the extreme right, where the last army of the coalition was driven from the neighbourhood of Strasbourg. Thus Principles 1 and 3 were applied.

It may be that the distribution of the enemy's force, in conjunction with the configuration of the theatre of war, will present an opportunity of applying Principle 2 at his expense.

Suppose the theatre of war to be an oblong, *a b c d*, of which the two sides *a b* and *b c* are in your pos-

session, being formed either by your own frontiers or by those of a friendly power. If A is the position of



a hostile army which has advanced from the base *c d* with the design of invading your frontier *a b*, you may apply Principle 2 by entering the theatre of war at *e* and operating against A's line of retreat. But this subject will be fully considered in a subsequent chapter.

No. 4. The relative value of the hostile armies.

1st. With respect to numbers.

If their real effective force were represented by their numbers, this 4th consideration would be very simple; but actually the following items enter in general far more into the determination of the effective force of an army than the mere numbers: —

2nd. Organisation and discipline.

Are the troops opposed to you veterans or raw levies? Are they well or ill officered? Are they of one race, or composed of men of different races fighting for a dominant people whom they detest? Can they manœuvre with rapidity and precision?

With a veteran army opposed to young troops; with an army well officered opposed to one ill officered; with an army of one race and feeling opposed to one of different races as above; with an army which manœuvres well and quickly opposed to one which can do neither; act boldly, endeavour to force your enemy to a general action, which may be decisive, as soon as possible.

Reverse the conditions, and it is your interest to avoid a decisive battle; to gain time to discipline and drill your men; to engage in partial contests where the chances are very great in your favour, to give your soldiers confidence. If forced to fight let it be in a position naturally strong, and increase its strength in every possible way artificially; and above all take care that your line of retreat is easy and open, and have your plan of retreat perfectly matured in your own mind.

3rd. The spirit of the soldiers, arising from former defeats or victories.

Napoleon understood probably better than any modern commander how to avail himself of the enthusiasm with which his victories inspired his soldiers, as well as of the discouragement they occasioned to his enemies. A fine example of this is afforded by his resolution to draw out his forces into the plain at Arcola to attack the Austrian army on the third day, after the previous two days' hard fighting. Napoleon

judged that the spirit of the Austrians must have been seriously depressed by their continued repulse during those two first days by an army of only half their numbers; and he was induced by that consideration, combined with that of the actual physical loss sustained by his enemies, to adopt the bold and apparently hazardous resolution of attacking them in the open country.

4th. Rapidity of marching.

The importance of rapid marching has been sufficiently dilated on in the Introductory Chapter. It may here merely be remarked that one army may be moving on "interior lines" with respect to another solely by reason of its moving more quickly, although every other element, such as distance and obstacles, may be in favour of that other.

5th. The character and skill of the commander.

The following remarks of Napoleon will illustrate this better than the most elaborate treatise:—

"The commander-in-chief is the head; he is everything to an army. It was not the Roman army which conquered Gaul, but Cæsar. It was not the Carthaginian army which made Rome tremble at her gates, but Hannibal. It was not the Macedonian army which marched to the Indus, but Alexander. It was not the Prussian army which defended Prussia for seven years against the three most powerful states of Europe, but Frederick."

The foregoing considerations must be carefully weighed in the mind of a commander, and that plan adopted which combines the observation of them all in the highest degree, it being well understood that, where a choice may seem to be at all nearly equally balanced between a prudent course which promises no very decided success, and a bold course whose results would be decisive, the bold plan is the one to adopt.

It is seldom that unforeseen circumstances do not modify the best-concerted plan of a campaign or a battle; and one of the surest tests of genius in a commander is his promptitude in adapting his plans to such circumstances. Such promptitude is doubtless much assisted by the habit of meditating well, in deciding the plan of a campaign or a battle, on every possible counter-combination the enemy may make, and of being prepared in his own mind for a decided course of action in every contingency that may arise: —

The following is one of Napoleon's maxims: —

"A plan of campaign should have foreseen all that an enemy may attempt, and should contain within itself the means of frustrating his designs. Plans of campaign are subject to endless modifications, arising from actual circumstances, from the genius of the commander, the nature of his troops, and the topography of the theatre of war."

DEFINITIONS.

Strategical Points.

Every point on the theatre of war, whatever be its nature, which conduces in any manner to strengthen your line of operation or of communication, is a *strategical point.*

Decisive strategical points are those only which are decisive in insuring the success of any operations of strategy either for offence or defence.

For instance; any point which, when seized, would enable an army to bring its mass into contact with successive fractions of the enemy, or to apply Principle 1 at his expense; any point which, when seized, would enable an army to operate on the communications of an enemy at the same time that it covers the communications of the army, or to apply Principle 2 at his expense; or, in general terms, any point the possession of which would enable an offensive army, by acting in accordance with the principles of war, to gain a decided advantage over an enemy; and any point whose possession by the enemy would enable him to frustrate an army's plan of campaign, or to endanger its communications; — is a *decisive strategical point — for offence.*

Again, any point which covers the line of retreat of a defensive army, which is strong enough to be maintained by that army, and which from its position cannot be turned or passed by an enemy with impunity, is a *decisive strategical point — for defence.*

From this definition it will be seen that any point on the theatre of war may become a decisive strategical point. Its doing so must depend on the relative situations of the hostile armies.

But those which are most likely to become so are as below enumerated, in the order of their importance.

Class 1. Fortified places or strong positions commanding the principal great roads which traverse the theatre of war. The greater the number of roads which centre in such places the greater the importance of those places as strategical points.

Class 2. Fortified places commanding a permanent bridge over a great river. A fortress which defends the approach to a bridge on both sides is evidently of more importance as a strategical point than one which commands one side only. And a fortress situated at the confluence of two great rivers and commanding a passage over both, is evidently more important still.

Class 3. Fortified places blocking up the approach to passes over a range of mountains. These are analogous to Class 2. And fortresses which block

up the valleys where two ranges cross or meet one another are analogous to those which are described in Class 2 as situated at the confluence of two great rivers.

It is possible for a strategical point to combine the conditions of all the above three classes; it will then become, if employed, a decisive strategical point of the very highest order. Ulm may be cited as an example of such a point. It satisfies the conditions of Class 1 by being at the junction of five principal roads; those of Class 2 by being situated at the confluence of the Danube and Iller; those of Class 3 by blocking up the valleys of both those rivers, being situated at the point where their valleys cross one another.

Fortified harbours may be considered as a 4th class where the command of the sea accompanies their possession.

CHAP. II.

BASES AND COMMUNICATIONS.

"Le secret de la guerre est dans le secret des communications."— NAPOLEON.

THE first consideration in commencing a campaign either offensive or defensive, is the base of operations.

The base of an offensive army is generally a part of the line of frontier which separates it from the theatre of war.

The base of a defensive army whose territory is invaded is, generally speaking, the capital of the country. If this should fall into the power of the invaders, in all probability the war would terminate; but if still able to continue the contest, the defensive force can choose any convenient point, line, or district in the country, not actually occupied by the invading army, as its base. It will naturally be that from which the greatest amount of injury can be inflicted on the enemy; and this object will be best accomplished by operating on his communications in accordance with Principle 2.

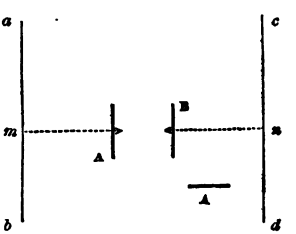
The choice of a base depends on the considerations which have determined the plan of a campaign.

But here the question will be considered purely in a military view, without reference to political or moral influences.

Any part of a frontier may be chosen as the base from which an army marches to invade an enemy's territory, provided it satisfy the conditions given in the definition.

Its configuration may be straight, curved, or angular.

Of these the least advantageous is a straight base. In this case the line of march of the army is necessarily perpendicular to its base, and the strategical front of the army is parallel to it. If it should happen that the enemy's base is of the same description and parallel to that of the army, there is no advantage on either side in this particular. For let



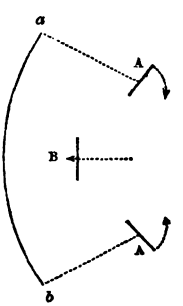
A and B be two armies, which have respectively advanced from parallel bases *a b*, *c d*; it is clear that A cannot place itself in a position A′, so as to apply Principle 2; for, although that position would

threaten B's communications, those of A would be equally exposed to attack from B.

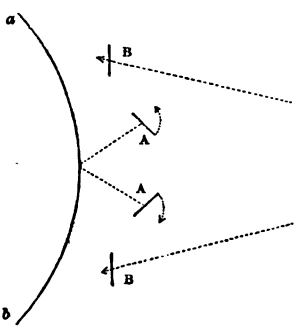
Curved or angular bases have different degrees of advantage according to circumstances; but they are all more advantageous than a straight base, as they all more or less afford an opportunity of applying Principle 2.

A curved base may be either convex towards the enemy or concave. The accompanying diagrams will explain the peculiar advantages of each.

No. 1.



No. 2.



a b (No. 1) is the concave base of A.

The flanks being advanced, an army operating from either flank can place itself more or less on the flank and rear of a hostile army B advancing towards *a b*, evidently *more* the nearer B approaches. This is an advantage. The disadvantage is that when A shall have fallen back before B, and retired

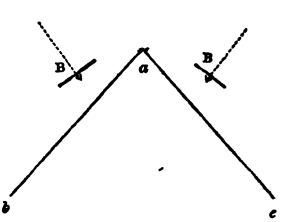
behind *a b* to defend that line, B will have the power of acting on interior lines with respect to A, as will be seen by referring to the diagram of the definition of interior lines.

a b (No. 2) is the convex base of A. In this case A moving from the centre of the arc, may more or less place itself so as to threaten the communications of a hostile army B advancing towards either flank of *a b*; evidently *more* the nearer B approaches. Here what has been said above of interior lines is reversed in favour of A, as when posted behind *a b* it can move to reinforce any point by the chord of an arc, while the enemy must move on the arc.

An angular base may be either salient towards the enemy or re-entering.

A salient angular base projecting into the theatre of war affords in a greater degree (greater in proportion to the increased saliency of the angle) all the advantages of the convex base.

b a c is a base salient towards the enemy. It is



F 3

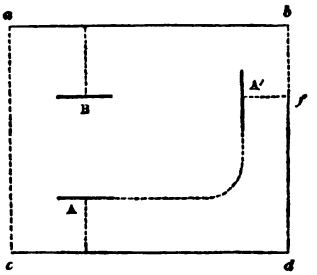
evident that an army acting from *a* threatens the communications of an army, B, which shall advance beyond *a*; and the advantage of interior lines is likewise great on the side of A in proportion to the saliency of the angle.

The disadvantage of this configuration is that the more salient the angle, the weaker is the line of defence at that point and immediately on each side of it, because it is more exposed to the enemy's attacks. Therefore no pains should be spared to strengthen the angle and the parts of the sides adjoining it, so as to render them unassailable.

But the configuration which enables an army possessing it to apply in the fullest manner Principle 2 is a re-entering angular base, when one of the sides which contain the angle is parallel to the strategical front of the enemy, and the other perpendicular to it (or, what is the same thing, parallel to his line of retreat). It is evident that, if an army has such an angular base, while its enemy has only a straight base, the first has two lines by which it may retreat indifferently, while the second has but one. This gives the first a great opportunity for applying Principle 2 at its adversary's expense; and the opportunity will be greater or less in proportion to the greater acuteness or obtuseness of the angle formed by the arms of the base.

a b c d is the theatre of war; A an army which

has advanced from *c d*, one side of the re-entering angular base *c d f*, of which one side, *c d*, is parallel



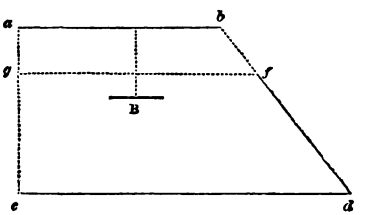
to the strategical front of B, and the other side, *d f*, perpendicular to it; *a b* is the base of B; *a c* and *b f* are neutral. A may safely place itself in such a position, A', as to threaten B's line of retreat. True, it has abandoned its first base *c d*, but only to adopt its second *f d*, on which it can retreat in equal security.

But although, as will hereafter be shown, to change your base after being committed in a campaign, at a critical moment, is an admirable strategical manœuvre*, the principles of war would not be best applied at the outset of a campaign by entering the

* To avoid mistakes, it is as well to explain that this may be practised when in presence of an enemy, either on the eve, or even during the progress, of a battle; in which case it would be called technically a tactical manœuvre.

theatre of war from the base *c d*. For A has moved into a position where it is exposed to attack from B, and has also made a flank march for the purpose of acting on B's communications. Whereas if A had marched behind *d f* and broken into the theatre of war from *f*, the point nearest to the enemy's rear, it would equally have menaced B's line of retreat, and would have been secure from all hostile attempts until after it moved forward from *f*.

It is evident that the more acute the angle *c d f*,



the shorter the distance an army A entering the theatre of war at *f* would have to march to gain possession of B's line of retreat; and the greater also the number of points of the compass on which A can direct its retreat from any point in the theatre of war in case of disaster (provided the point is within the area *g c d f*).

That the last is plainly an advantage is deducible from what has been already said; and it applies equally to the case of a battle: for the army which has but one line of retreat, if defeated and that line

be intercepted, is ruined: while, if an army which has many lines be defeated, though one or more of them may be intercepted, it may still retire in safety on some other.

It results from what has been said that

(a.) *The route by which an army marches towards its object must be sheltered by its own frontiers or by some natural obstacle throughout as great an extent as is possible.* And

(b.) *That part of the base of operations is the most advantageous to break out from into the theatre of war, which conducts the most directly upon the enemy's flank or rear.*

Moreau neglected the above precepts (a.) and (b.) in the campaign of 1800 in Germany, by breaking out into the theatre of war from Strasburg, Brisach, and Basle, which immediately exposed his corps to the attacks of the enemy, in place of availing himself of the protection of the Rhine to march with his united army to Schaffhausen, and thence moving into the theatre of war on to the enemy's flank and rear.

The northern frontiers of Bohemia, with reference to Saxony and Silesia; the northern and southern frontiers of Switzerland, with reference to Germany and Italy; and part of the western frontier of Russian Poland, with reference to Prussia; are examples of a salient angular base of operations.

Examples of a re-entering angular base are,

1. The line of the Upper Rhine and the northern frontier of Switzerland, for offence against Germany.

2. The line of the Maritime Alps, and the southern boundary of Switzerland, for offence against Italy.

3. The line of the Lower Rhine and the line of the Maine, for offence against Westphalia.

4. The line of the Maritime Alps, and the line of mountains from Col di Tenda towards Genoa, for offence against Italy.

Examples of a base which is both salient and re-entering, are,

1. For operating from France against both Germany and Italy, the line of the Upper Rhine, the projection of Switzerland, and the Maritime Alps, form a base of this kind. It was employed by Napoleon in the campaign of 1800. In this example it is evident that there is a double re-entering base.

2. The whole of the western frontier of Russian Poland, for operating from Russia against Prussia.

There remains to consider the sea as a base of operations for an invading army.

The base of an army which invades by sea is its ships, and it is indispensable to the safety of the invading force that its fleet should possess the com-

mand of the sea. Even so, ships form a dangerous and precarious base until the army shall form an intermediate base of its own, which should consist of one or more harbours strongly fortified, and must moreover be large and commodious in every respect.

When the Anglo-French expedition invaded the Crimea it had no base but its ships only, until after it marched round to the south of Sebastopol and acquired the harbours of Kamiesch and Balaklava.

Had a storm dispersed the fleet at Eupatoria when about half of the invading force only had landed, that half might have been destroyed. Again, had the Allies been defeated at the Alma, they might have withdrawn to the protection which the guns of the fleet could afford so long as it was able to remain on the coast; but if it had been dispersed by a storm, the position of the defeated army would have been most critical.

With the undisputed command of the sea and the possession of strongly fortified harbours, the communications of an invading army, where it only operates a few miles from those harbours, are the safest possible; for all that is necessary is to prevent the enemy breaking in on that short line. In the actual case under consideration, a great part of the difficulties of the English army arose from the insufficiency of Balaklava as a harbour for such a force.

Choice of a Line of Operations.

The choice of a line of operations, as follows from the foregoing remarks, must be regulated by the configuration of the base. Some military writers suggest that the establishment of the base should rather be subservient to the intended lines of operation, which are themselves determined by the objective.* Now as clear ideas are very necessary, it may be well to dispose of this at once.

The plan of the campaign, then, is formed on the careful analysis of the considerations indicated in the remarks on that subject. It is that plan which determines the objective of the campaign or of the operations. To attain that objective there may be many favourable lines of operation in the abstract; but none of them can be available to the army unless they start from some point, line, or district which fulfils the conditions stated in the definition of "bases."

For instance, the objective may be to act upon the enemy's communications by a short march perpendicular to their line, as in the diagrams which illustrate re-entering bases. How could this be

* "The objective" is a technical military term signifying, as the word implies, the aim or object of the military combinations and movements on the theatre of war.

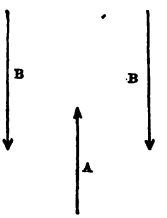
executed without the possession of a base of the proper configuration?

One of the elements to be considered in forming the plan of a campaign is the configuration of the theatre of war: that configuration arbitrarily determines the base of operations, or bases (if more than one), from which to choose. But the choice of the best line of operations must be made from among the many which the same base may offer, in accordance with the foregoing remarks on bases of different configuration.

Lines of Operation. — The principle which particularly applies to them, and must never be violated, is Principle 3, which indicates that your line or lines of operation must be such that the fractions of your army moving upon them shall be more quickly unitable at any decisive point than the fractions of the enemy. Provided these conditions can be fulfilled, lines may be single, double, or multiplied (see definitions), without violating the rules of war. But as a general rule lines of operation should be as few in number as possible.

Single lines are the safest. The concentration of your whole force can thereby be effected with greater precision and quickness than with double lines; but these last are sometimes convenient, provided always your enemy likewise operates on double lines, and that they are exterior to yours.

(First consider, when we speak of lines of operation, that they are confined to the same theatre of war.) But a double line of operations has never succeeded against a single line.

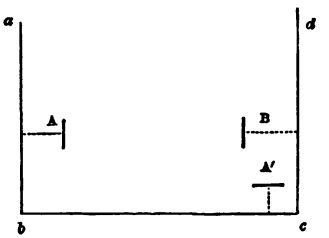


A is an army operating by a single line, opposed to B, operating on a double line. Let the force of A be equal to that of B. It is plain that A can throw itself on one of B's lines before the part of B's army on the other line can reach it; and can thereby apply Principles 1 and 3; or A may leave a comparatively small force to observe one of B's *corps d'armée* while the mass of its force is directed against the other.

It may be supposed that a re-entering base would justify the employment of a double line against a single.

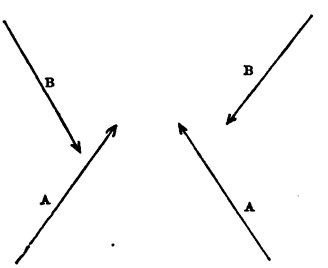
Thus, if *a b c* be the re-entering base of A; *c d* the base of B; it may appear that A might advantageously advance by one line from *a b* against the front of B, while it operates by another line from *b c* against B's communications. But this

is a fallacy. In this case B has the advantage of interior lines. A and A′ having no communication,



there can be no concert between them. B, being equal to A and A′ together, can beat them in detail. Even if A and A′ are together superior to B, their chances of success are diminished by their separation; and "in war it is an axiom that *every possible chance of success must be enlisted on your side.*" (Napoleon.)

In this case both A and B are on double lines;



it is plain that A has the advantage of interior lines, and may leave a comparatively small force to watch one of B's *corps d'armée*, while the mass of

its force is directed against the other; thus again applying Principles 1 and 3.

The reader can extend this reasoning for himself, observing that it applies equally to lines of operation on different theatres of war; as for example, the lines of operation of the French armies, commanded by Moreau and Napoleon, into Germany and Italy, which started respectively from the northern and southern frontiers of Switzerland in the year 1800.

In advancing into the theatre of war, the flanks of the strategical front of an army are the weakest points. They must both be supported, or one of them, if possible, on some natural obstacle, such as a chain of mountains or a great river. An additional argument in favour of single lines of operation is drawn from this, viz. that where more armies than one operate in the same theatre of war towards the same point, which have no communication with one another, there are twice as many flanks to be protected as there are armies; while any number of armies operating in the same theatre towards the same point, which are in communication with each other, have but one strategical front, and therefore but two flanks. There is however one condition necessary to be observed in the last case, viz. that all the armies should be under one supreme head. Napoleon says: "*Unity of command is the most important thing in war. Two independent armies should never be placed on the same*

theatre." How many illustrations of the truth of this maxim may be drawn from the history of the Crimean campaigns!

In advancing against an enemy in the theatre of war, the strategical front of an army may have both flanks supported on some great natural obstacle, or it may have one flank; or both flanks may be unsupported.

In the first case, the lines by which the army advances may lead from both flanks, and from various points along the front, care being taken that the army is not pierced through the centre, that being the weakest point. It would be an error to advance from one flank only, because no advantage would be derived from the obstacle which should have supported the other flank, and the enemy might penetrate between the army and that obstacle. It would be a greater error to advance only from the centre, because by so doing both the flank supports would be rendered unavailing, and the enemy might interpose between the army and either of those supports.

In the second case, where one flank only is supported, the advance must be made from the supported flank; or, in other words, one flank of the army must in its advance rest upon the supporting obstacle, and the various marching fractions of the army must take their direction from, or "feel into," that flank. For if the advance of the army led from

the unsupported flank, the obstacle which should have protected the other flank would be rendered unavailing, and the enemy might interpose between it and the army.

In the third case, where both flanks are unsupported, the advance must lead from the centre; that is to say, the centre must be the directing point by which the marching fractions must regulate their movements. Here there is no advantage in operating from either flank, but there is an advantage in operating from the centre, because the concentration of the whole army can thereby be effected in half the time which would be required to effect the concentration on either flank.

The following instances will explain the above remarks: —

In 1796, the Austrian marshal Wurmser marched from the Tyrol into Italy for the purpose of relieving Mantua, which was besieged by Napoleon. The French force consisted of 40,000 men, of whom 10,000 were employed in the siege. Wurmser had 70,000. The Austrian marshal divided his force into three corps, which advanced from Trent by the following routes. The left corps of 20,000 men marched by the left bank of the Adige. The centre corps of 30,000, under Wurmser in person, by the country between the Adige and the lake of Garda. The right corps of 20,000 advanced by the valley of

the Chiese, on the west of Lake Garda, on Brescia, for the purpose of applying Principle 2 by cutting off Napoleon's communication with Milan.

It will be seen by referring to the map, that the Austrians employed three lines of operation, the communication between which was prevented by the Adige river and the lake of Garda.

Directly the design of Wurmser became unmasked Napoleon raised the siege of Mantua, and held his whole force united, in order to avail himself of the great advantage of interior lines afforded him by the separation of the Austrian columns to overwhelm them in detail. Possessing the bridges of Verona and Legnago over the Adige, he knew he was safe from being taken in flank or rear by the Austrian left column so long as those bridges were defended. He could therefore concentrate his attention on the other two lines by which his enemies were approaching.

Leaving a small force under Massena to delay the progress of Wurmser's corps in the strong positions of Corona and Rivoli, he directed the mass of his force against the right Austrian column, and after having completely dispersed or destroyed it in a succession of combats, of which the most important was that of Lonato, he gave battle to Wurmser before whom Massena had been obliged to fall back, completely defeated him at Castiglione and drove

him back into the Tyrol. The Austrian left corps retired likewise without having been brought into operation against Napoleon at all.

Here Napoleon's line of operations was single against the Austrian triple line; and he employed a comparatively small force to delay one of the Austrian *corps d'armée*, while the mass of his force was directed against the other.

Later in the same year the Austrian marshal Alvinzi advanced into Italy to relieve Wurmser and 24,000 Austrians, who had meanwhile been shut up in Mantua.

Alvinzi, with 40,000 men, advanced from the Piave river across the Brenta; while Davidowich, with 18,000, advanced from Trent by the country between the Adige and Lake Garda; the primary object of the two armies was to unite at Verona; the ulterior object was to march united to raise the siege of Mantua. Napoleon had but 30,000 men available in the field; 8000 were employed in the blockade of Mantua, but he could not on this occasion raise the siege, as he would by so doing have liberated 24,000 enemies whom the peculiar situation of the town enabled a very inferior force to enclose. He therefore employed 12,000 men to block the march of Davidowich in the position of Rivoli, while with 18,000 men he opposed the advance of Alvinzi

on Verona. Having rid himself of Alvinzi by the brilliant victory of Arcola, he marched with all speed against the column of Davidowich, took a great part, and dispersed the remainder.

Here again the Austrians employed a double line of operations. Napoleon also necessarily employed a double line, but it is evident that his lines were interior to those of the Austrians, since the two French fractions were interposed between the two Austrian armies. Mantua was the point of junction of the two French lines, and the forces upon those lines could unite at that point by merely falling back, being still always interposed between the two Austrian armies.

Later in the same year Alvinzi made another attempt to relieve Mantua; he again acted on two lines. The principal attack was made this time by Alvinzi from Trent upon Rivoli; a secondary one from the Piave upon the Adige, by Provera. Napoleon employed a small force to defend the passage of the Adige against Provera, and directed the mass of his army against Alvinzi, whom he defeated in the memorable battle of Rivoli.

Moreau's campaign of 1796 in Germany affords a signal example of the disadvantage of double lines of operation.

The French force consisted of two armies, one

commanded by Jourdan, the other by Moreau, who was the commander-in-chief of both. The course of the Rhine from Mayence to Basle formed the French base of operations. The Austrian general Wartensleben was opposed to Jourdan; the Archduke Charles to Moreau. Jourdan advanced from Mayence by Wurzbourg and Schweinfurt to Bamberg; thence by the right bank of the Rednitz to Nuremberg. Wartensleben, whose force was inferior, retiring before him, finally took post behind the Naab river which falls into the Danube near Ratisbon.

Moreau advanced from the neighbourhood of Strasbourg across the Neckar by Gemund, the Archduke retiring before him, and on the 8th of August took up a position on the river Brenz.

The object of the two French armies was to unite at Ratisbon, and afterwards to operate against the hereditary states of Austria.

On the 11th August the Archduke, in order to prevent the junction of Moreau with Jourdan, whose headquarters on that day were at Lauf, near Nuremberg, only three marches distant from those of Moreau, attacked the latter at Neresheim; but the French maintained their ground, and the Archduke, to avoid being enclosed between the two French armies, retreated across the Danube.

Moreau remained inactive for several days after the battle, and at length advanced to Donauwerth,

but retired again to Hochstett without sending even a party of dragoons to endeavour to discover the position of Jourdan.

This hesitation and these false movements emboldened the Archduke to attempt that which he had believed to be no longer possible, viz. to prevent the junction of the two French armies.

For this purpose, leaving thirty battalions behind the Lech to oppose Moreau's advance on Munich, he marched with 30,000 men against Jourdan, who was in the neighbourhood of Amberg. Being joined by Wartensleben who advanced from the Naab, he attacked Jourdan's scattered divisions in detail, and drove him back at all points. By rapid manœuvring the Archduke intercepted Jourdan's line of retreat from Bamberg to Schweinfurt, at the same time that he occupied Wurzbourg and cut him off from that place. Jourdan succeeded in reaching Schweinfurt on the 31st of August, after hard marching and fighting; and on the 2nd of September he attacked the Archduke in front of Wurzbourg, but was defeated, and obliged to regain the Rhine by crossing the river Lahn at Arnstein.

Meanwhile Moreau had remained inactive for twelve days after the battle of Neresheim; at length on the 23rd of August he crossed the Danube, forced the passage of the Lech on the 24th, and advanced to within nine miles of Munich.

On the 7th of September Moreau again advanced without any distinct project; he was uneasy on account of receiving no intelligence of Jourdan; he retreated again on the 10th, and detached Desaix with 12,000 men to endeavour to open a communication with Jourdan, who was at that time on the Lahn, 250 miles distant.

Desaix joined Moreau on the 16th, with the intelligence of the retreat of Jourdan.

On the 18th September an Austrian force of nine battalions, detached for the purpose by the Archduke from the garrisons of Manheim and Philipsbourg, made an attack on the *têtes-de-pont* of Kehl and Huninguen, but failed.

Moreau, justly alarmed by an attempt whose success would have deprived him of his communication with France, commenced his retreat from Munich on the 20th of September, and on approaching the Rhine found that the Austrians were in possession of the defiles of the Black Forest, between him and that river. He was obliged to fight the battle of Biberach on the 2nd of October, where he defeated the Austrians. He was obliged afterwards to force the defiles, and at length arrived with his army at Freybourg, where he was in communication with France by the bridges of Huninguen and Brisach. On the 26th of October, after the indecisive battle of Schliengen, where it was attacked by the Archduke

Charles, the army of Moreau withdrew across the Rhine, by the bridge of Huninguen, in some disorder.

There cannot be a more signal instance of the danger of employing two armies on the same theatre of war, to act towards the same point by different lines of operation.

The French armies were forced back across their own frontiers with great loss of credit by a very inferior enemy, by reason of the want of communication between them, which prevented Moreau from being aware of the position of Jourdan's army, and from effecting a junction with it, although at the distance of only three days' march.

The Austrian armies also employed a double line of operations; and bad as were the combinations of Moreau, the lines of operation of the Austrian armies were at one moment greatly exterior to those of the French; for when Jourdan drove Wartensleben behind the Naab, the distance between the two Austrian armies was thereby increased, and both of the French armies were interposed between them.

But the Archduke, profiting by the extraordinary supineness of his adversary, resumed all the advantage of interior lines. Leaving a comparatively small force to act against one of the French lines, he applied Principles 1 and 3 by carrying the mass of his force (viz. the rest of his own army and that of

Wartensleben united) against the other, drove back Jourdan's army to its own frontiers, and applying Principle 2 by threatening Moreau's communication with France, obliged that general to abandon all the advantages he had gained, and to retire behind the Rhine.

Moreau's apathy in failing to detach a force in search of Jourdan on the day after the battle of Neresheim, 12th of August, in place of waiting until the 10th of September, is not to be excused.

In accordance with Maxim (a.) of this chapter, and with the remarks which immediately precede these examples, Jourdan's army was protected as to its left flank by the Maine as far as Bamberg, and by the mountains of Saxony in its advance from that place to Nuremberg.

Moreau's army was protected as to its right flank by the Danube in accordance with the same maxim: but this was not intelligently to apply that maxim, for the object of the two being to unite, Jourdan's army should have operated from its right flank, while Moreau should have operated from his left, so as to be able to unite the two on one strategical front. Here the necessity of uniting the two armies so as to apply Principle 1 was more urgent than that of supporting one flank of each of the isolated armies on some natural obstacle, which latter mode of operation still left a flank of each army uncovered.

Jourdan's line of operations should have been by the left bank of the Maine on Mergentheim, from which place his army, feeling towards its right, might have effected a junction with Moreau's left; and having thus formed one strategical front, it would have brought forward its left flank to the Danube, completely severing the communication between the Archduke and his lieutenant, and applying Principles 1 and 3 by beating them in detail.*

An army which advances far from its natural base of operations into an enemy's country, should provide itself with intermediate points of support along the line of its advance; thus planting one step firmly before taking another forward. These points are usually fortified towns, in which supplies of all kinds may be collected. The distance of these points from each other must, of course, depend on various considerations; amongst which will largely enter the question as to how far the army can afford to weaken itself by the detachments necessary to guard them. When the distance of the army from its base becomes very extended, intermediate bases are formed at convenient distances, which become thus linked to each other and to the primary base by the chain of posts or fortresses along the line of operations.

* For the above Examples see any good maps of Germany and Italy.

There is another description of base which must be noticed before proceeding further, because military writers designate it by a particular technical name; viz. *a base of manœuvres.* It is the point, line, or district which an army employs when within reach of an enemy in the theatre of war, on which to base the immediate manœuvres whose object is to bring on a collision; and its immediate object attained, it is then changed for any other.

Napoleon's campaigns illustrate in the highest degree the science of creating and maintaining safe lines of communication; both on account of the great distance at which he operated from his primary base, and the immense armies for which he had to provide. And the best illustration of the subject which can be given is to describe his method of proceeding by an abstract of some of his campaigns.

Campaign of Italy, 1796. — Chambery was Napoleon's nearest depôt of supply on the frontier of France. He started from Savona, crossed the mountains where the Alps and Apennines join, took possession of Cherasco, a fortified place at the confluence of the Tanaro and Stura rivers about sixty miles from Savona, and there established his magazines. Having forced the King of Sardinia to cede to him the fortress of Tortona, about sixty miles east of Cherasco in the direction of Milan, he established maga-

zines there also, crossed the Po at Placentia, and seized Pizzighittone on the Adda about seventy-five miles from Tortona; advanced to the Mincio and took Peschiera 90 miles from Pizzighittone, and took possession, on the Adige river, of Verona and Porto Legnago, both on the left bank, the first giving him three stone bridges over the Adige, the last one. He remained in this position till the fall of Mantua terminated his first campaign. Between his camp near Verona, and Chambery, he held four fortresses which contained his hospitals and magazines, and only required 4000 men to garrison them, for which service the convalescents and conscripts were sufficient. He thus had on his line of communication with France, of about 300 miles, places of depôt at the distance from one another of about four days' march.

In this campaign the Maritime Alps and the mountains from Col di Tenda to Savona formed his primary base. The line of the Adige was his secondary base for offensive operations east of that river.

1797.

Napoleon marched from the base of the Adige to the Simmering, only a few marches from Vienna. In his progress he crossed the Piave and Tagliamento rivers, and fortified Palma Nova and Osopo on the north-east frontier of Italy. He then crossed the Julian Alps and made of Klagenfurth a third *point*

d'appui, about five marches from Osopo. He thus had on his line from the Adige to the Simmering, of about 240 miles, a place of depôt every five or six marches.

1805.

Napoleon again marched on Vienna, but this time by the Danube. He took Ulm; but the fortifications had been levelled, and he did not therefore form magazines there. He marched to the Lech and made Augsbourg on that river his place of depôt. Thence he marched to the Inn and secured Braunau on that river, which gave him a bridge. This was his second depôt, which permitted him to go on to Vienna. He also secured a bridge over the Danube at Lintz, and covered it with strong works, as a *tête-de-pont.* Vienna being beyond reach of a *coup de main*, he entered Moravia, and took possession of the citadel of Brünn, which was immediately armed and provisioned; situated at 120 miles from Vienna, that place became the *point d'appui* for his operations in Moravia. He fought the battle of Austerlitz at one day's march from Brünn. Had he been defeated in that battle, he had two lines of retreat across the Danube, one by Vienna, one by Lintz.

1807.

The Oder was Napoleon's base; he had on that river the fortresses of Custrin, Glogau, and Stettin.

In this campaign the Oder was the primary, the Vistula his secondary base, from which he would have invaded Russia had he not made peace. He advanced on the Vistula, crossed it at Warsaw, and fortified Praga, the suburb of that city on the east bank; because it served as a *tête-de-pont* to assure him the passage of the river, and as a depôt at the same time. He also fortified Mödlin and Thorn on the same river. He besieged Dantzic, which became, when taken, his place of depôt and the base of the operations which led to the battle of Friedland.

1809.

Augsbourg was again his principal *point d'appui*, as in 1805; but the Austrians had in the meantime levelled the defences of Braunau. Napoleon therefore fortified Passau, a much more advantageous place, because, situated at the confluence of the Inn and the Danube, it secured him a passage over both those rivers; he secured another passage of the Danube at Lintz by covering its bridge with works of great strength. His army, arrived at Vienna, had choice of two lines of retreat; one on Bavaria by Lintz or Passau and Augsbourg; the other on Italy by Gratz and Klagenfurth.

1812.

The base of the Vistula which Napoleon had pre-

pared with so much care in 1807, by the occupation of Dantzic, Thorn, Mödlin, and Praga, became now his primary base for the invasion of Russia. His secondary base was the Niemen, strengthened by the possession of Kowno and Grodno on that river; the connecting link between his first and second bases being Veilau on the Pregel. Smolensko was his grand depôt for the movement on Moscow; Wilna and Minsk the connecting links between Smolensko and the Niemen. On his extended line of operations he had a fortified place as a *point d'appui* every eight days' march. All the intermediate post-houses were loop-holed and entrenched, and occupied by a single company and one gun. These precautions rendered his communications so secure that during the whole campaign not a courier nor convoy was intercepted.

In the campaign of 1796, Cherasco, Tortona, Pizzhighittone, Peschiera, were Napoleon's strategical points. Verona and Legnago were decisive strategical points, since they gave him the command of the Adige, and covered the siege of Mantua from the attempts of an enemy coming from the east of that river.

In the campaign of 1805, Brünn became a decisive strategical point, being the base of manœuvres which led to the battle of Austerlitz.

In 1807, Dantzic became his decisive strategical

point, since it was the base of the manœuvres which led to the battle of Friedland. A glance at the map will show that roads branched from it to Stettin, Custrin, and Glogau, the fortresses in his possession on the line of the Oder, his primary base. Dantzic therefore covered his communications, while it enabled him to strike a blow against the enemy.

In 1809, Passau, at the confluence of two great rivers, and Lintz, were decisive points, since their possession enabled Napoleon to march to Vienna, and could cover his retreat.

In 1812, Smolensko became a decisive point, since the operations which led to the battle of Borodino, and the fall of Moscow, were based upon it.

CHAP. III.

MAXIMS.

Maxim 1.—NEVER abandon your line of communication from over-confidence. (*Napoleon.*)

Example.—In 1757, Frederick the Great was besieging Prague. He advanced to engage the Austrian succouring army under Marshal Daun at Kollin, leaving a part of his force under Marshal Keith to blockade the town. His natural line of retreat, therefore, was upon Prague. The Austrian position was a range of low hills which swept round in the arc of a circle, of which the road by which Frederick was advancing formed the chord. Frederick carried his whole army by a flank march to turn the Austrian right. By this movement, which was in presence of, and within the range of grape from, the Austrian position, he abandoned his line of retreat on Prague, which, when defeated, he could not regain, as he would have had to run the gauntlet back again along the road by which he had advanced, within reach of the victorious army. He consequently was obliged to relinquish the siege of Prague, and to cross the Elbe

at Brandeis. Marshal Keith, whose force was on the left bank of the Moldau, was forced to retire, and only recovered his communication with the king by crossing the Elbe at Leutmeritz.

Thus one fault in war entails another. When Frederick was defeated, his movements were necessarily on exterior lines, for there were two Austrian armies between the two fractions of his force commanded by Keith and himself; and, moreover, for some time two great rivers, the Elbe and Moldau, were between those fractions.

Maxim 2.—Although it is a maxim never to abandon your line of communication, yet to change that line is one of the most skilful manœuvres of the art of war, where circumstances authorise it.

Example 1.—At the battle of Leuthen in 1757, Frederick the Great carried his whole army to the right by a flank march (but in this case his movement was concealed from the enemy), and placed it so as to bring the mass of his force to bear on the left flank of the Austrians. In this case, as at Kollin, he abandoned the line by which he had operated, namely, that from Neumarck in rear of the left flank of his line of battle, and unless he had possessed another line by which he could retreat to some place of safety in rear of his right flank, he would, although victorious, have acted at variance with the principles of war; but he had another line,

viz. that on Upper Silesia, which he adopted when be abandoned the first. The Austrian general, whose army was greatly the stronger, doubtless believed that Frederick would preserve his line on Neumarck, and felt no apprehension for his left flank, which indeed Frederick could not have attacked effectually had he been obliged to preserve the line by which he had advanced; he must, in that case, have left a part of his army to guard that line, and he could not, therefore, have been in superior force at the point of attack on the enemy's left flank without separating his own wings.

Example 2.— *Campaign of Jena*, 1806.—Napoleon operated to invade Prussia from Mayence, his left flank covered by the line of the Maine. His headquarters were at Bamberg, and he concentrated his army on the Rednitz river. The King of Prussia directed the corps of Blucher and the Duke of Weimar towards the Maine, to intercept Napoleon's communications with Mayence. But Napoleon knew better than to expose this line to the attempts of the enemy without having provided another. When he advanced from Bamberg, he adopted a line of communication by Kronach (a fort situated at the outlet of a pass in the mountains of Saxony), and Forcheim (a fortress on the Rednitz), on Strasbourg. Having nothing to fear for this line he advanced rapidly, and intercepted the com-

munications of the Prussian army, which had arrived at Neustadt in its march towards the Maine, when it was arrested by the news of Napoleon's advance. But there was no longer time to regain its line of retreat. Napoleon's whole army was interposed between it and the whole of its magazines and its capital. Defeated at Jena, although in the heart of its own country, it was unable to effect any safe retreat. The results of the battle were the complete destruction of the Prussian army of which only a few squadrons remained together and reached the right bank of the Oder, and the imposition of a humiliating peace on Prussia.

Remarks. — In this campaign the Prussians violated Principle 2, for they exposed their own communications while assailing those of the enemy.

Napoleon made use of the base of the Maine at the outset of the campaign. His line of operations was protected by that river in accordance with Precept (a.) of Chapter II. His offensive movement from Bamberg illustrates Precept (b.) of the same chapter; and Napoleon applied Principle 2 by acting on his enemy's communications without exposing his own.

Example 3. — In 1808 Sir John Moore advanced from Portugal far into Spain; and, to effect a diversion in favour of the southern patriots, adventured himself within reach of immensely superior hostile forces which were directed by Napoleon. But his

ships were ordered round to Corunna, which place he adopted as his base on leaving Portugal. He never could have regained Portugal. The direction of his march was N.E., and his right flank was therefore exposed to the attacks of the French forces, which would have gathered on it from the E. and S.E. Corunna was chosen as being the point which led away the most directly from the general line of his enemy's advance.

Example 4. — In May, 1813, Wellington's army quitted Portugal for the last time. It crossed the Tormes, Esla, Douro, Carrion, and Pisuerga rivers, and turned the sources of the Ebro. Up to this moment Portugal remained the base of operations, but now it will be seen the army was in communication with St. Andero (a line of forty miles in place of one of 250); and, in the words of Napier, "The English ships entered St. Andero, where a depôt and hospital station was established, and the connection of the army with Portugal was severed; she was cast off as a heavy tender is cast off from its towing-rope, and all the British military establishments were transferred by sea to the coast of Biscay." In the battle of Vittoria, which was the result of these masterly movements, Wellington acted on the communications of the enemy without exposing his own, which caused the confused retreat of the French army.

Remarks.—The advantage of possessing the command of the sea to an army operating in a peninsula or an island is evidently enormous. It has as many different lines of retreat open to its choice as there are safe harbours the roads to which are not intercepted by the enemy; and this affords the opportunity of applying Principle 2 in the highest degree at an enemy's expense. Had Napoleon possessed the command of the sea in place of the English, the History of the Peninsular War never would have been written.

The foregoing two maxims are evidently deductions from Principle 2.

Maxim 3.—If you march to the conquest of a country with two or three armies, which have each its line of operation, towards a fixed point where they are to unite, it is a maxim that the union of these different *corps d'armée* must never take place near the enemy, because not only may the enemy, by concentrating his forces, prevent their junction, but he may moreover beat them in detail.

Maxim 4.—An army ought to have but one line of operation, which it must carefully guard, and never abandon except from an overruling necessity.

These are two of the maxims of Napoleon; they are both deductions from Principle 3, and seem at first sight to be at variance with each other, but it

is not so. Provided the point of junction of the different *corps d'armée*, which advance by different lines, be beyond the possible reach of the enemy's attempts, and the forward movement of the united army from that point be on a single line, the principle of the last maxim will have been adhered to in both cases.

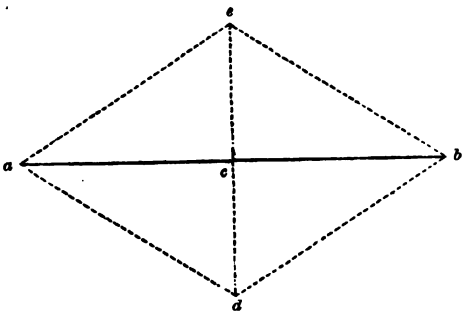
As regards the last maxim also, it may be remarked that a distinction must be made between a line of operations and a line of retreat or communication.

It is a maxim of Napoleon's, to have but one line of operation towards his decisive point, but equally so to have as many lines of retreat from that point as possible; as the following will show.

Maxim 5. — "When two armies are ranged in battle, and one of them has but one point to retreat upon, while the other can retreat on all the points of the compass, all the advantage is with the last. It is in such a case that a commander should be bold to strike great blows, and manœuvre on his enemy's flank; Victory is in his hands." (*Napoleon.*)

Maxim 6. — It is one of the most important principles of war to unite the scattered bodies of an army at the point which is the most distant and the best protected from the attempts of an enemy. (*Napoleon.*)

This is deduced from Principles 1 and 3. For let *a b* be the general front of an army, whose parts are



posted at *a*, *c*, and *b*; let the enemy be advancing from the direction *e*. If *e* be the point on which the bodies at *a*, *c*, and *b* are to concentrate, their union may be safely effected supposing intelligence of the enemy's approach to have been received, when he is still at a greater distance (in time) from *e* than the most distant of the scattered bodies of the army. If that is not the case the enemy will be on interior lines, and will arrive at *e* before the army can there unite, and will thus be enabled to apply Principle 1 at its expense by beating its successively arriving detachments in detail.

If *d*, in rear of *a b*, were the point of concentration, the above evil could not arrive.

Example. — *Turenne.* — In 1645 Turenne was at the head of 12,000 men, of whom 5000 were cavalry. He crossed the Rhine from Spire, advanced and

took Stutgard, crossed the Neckar, advanced to the Tauber river, and established his headquarters at Mergentheim a small town on its left bank. His opponent the Count de Merci, whose force consisted of 16,000 men, being distant two marches, Turenne distributed his force in quarters of refreshment around Mergentheim. On the 2nd of May at daybreak learning that Merci was advancing towards him with his whole force, he ordered the concentration of his army at Erbsthausen six miles in front of Mergentheim on the road by which the enemy was advancing. Turenne went himself to Erbsthausen and found only 3000 infantry and part of the cavalry arrived in his intended position, at the moment when the Bavarian army came in sight at the distance of less than a mile. There was a wood on the French right, which he occupied with his infantry in a single line. The left was composed of the cavalry also in one line. Merci's right was of cavalry, his left of infantry with cavalry in rear. The Bavarian infantry advanced to attack the French right posted in the wood. Turenne sensible that all was lost if his right was forced, charged at the head of his cavalry, drove the Bavarian cavalry of the right wing off the field, and took all their guns and twelve standards; meanwhile however his infantry had abandoned the wood and fled in disorder. The Bavarian cavalry of the left wing then traversed the wood and fell upon

the flank and rear of Turenne's victorious troopers; they were broken; Turenne escaped with difficulty. He fortunately met, at some distance from the field of battle, several fresh squadrons on their way to join him, with whom he showed a bold front, and gained time to restore the formation of his army and to effect an orderly retreat.

Observations. — Turenne violated Principles 1 and 3 by indicating a spot for the concentration of his army six miles to his front in the direction of his advancing enemy. He gave Merci greatly the advantage of interior lines, which enabled him to arrive at the point of concentration before half of Turenne's army was there assembled, and to apply Principle 1 at his expense, by attacking the French fraction with his whole force.

Maxim 7. — To operate by lines distant from each other and without intercommunication, is a fault which generally leads to another. The advancing columns of an army must be in constant communication with each other, so that an enemy cannot penetrate between them. (*Napoleon.*)

Maxim 8. — The communication between the different fractions of an army, whether in position or in movement, must always be perfectly open and easy.

Maxim 9. — To besiege a fortified place whose possession would be useless to yourself, and which

gives the enemy no power of annoyance, is to waste time and means.

The places which an invading army is justified in besieging are such as come within the meaning of the definitions of strategical points and decisive points.

1st. Those whose possession by the army will undoubtedly strengthen its line of communication.

2nd. Those whose possession by the enemy will enable him to act upon that line.

3rd. Those whose possession by the army will enable it to execute the plan of campaign in the most successful manner.

4th. Those whose possession by the enemy will enable him to frustrate the plan of campaign.

To besiege places other than these would be to waste time, means, and men; the last, not only by the loss incurred in the actual siege, but also by the strength of the garrison required to defend the acquisition.

The siege of a regular fortress, particularly when a hostile army will endeavour to save it, is one of the most arduous and difficult operations of war; and nothing can be undertaken by the army in furtherance of the plan of campaign so long as such siege continues; unless indeed the strength of the army is very superior to that of the enemy on the theatre of war.

The science of the engineer has reduced to a certainty the time which is required by an army, with sufficient means, to reduce any fortified place. (See note on the Siege of Sebastopol at the end of this Chapter.)

It is an important rule that every place, besides being sufficiently garrisoned, shall be provisioned not only for the time during which it can sustain a siege, but also for at least one third in excess of that time.

Should a place whose possession is essential to an invading army be provisioned only for the period during which it can sustain a siege, then the army may continue its advance, leaving a comparatively small force to blockade the place, in the certainty of reducing it by famine in the same time, and without the loss, demanded by an actual siege.

Those places whose possession by the enemy would enable him to endanger your communications, although it may not be essential for the army to hold them when taken, must be dismantled.

If a general take a fortified place whose defenders do not become prisoners of war, he adds to his enemy's active force in the field. And if it be necessary that he should hold the place when taken, he weakens his own active force to the extent of the garrison required, thereby conferring a double advantage in this particular on his adversary.

In the Peninsula the sieges of Badajos and Burgos were undertaken because the first lay close to the base of operations, — the last, on the line of operations, of the British army.

In the first Scinde campaign, Sir C. Napier undertook a flank march of eight days into the desert to destroy Emaum Ghur, where 2000 Beloochees had shut themselves up, and whence they would have cut off his line of communication, had he advanced without taking that place.

Note to Maxim 9 on Sieges.

Without entering on the subject of sieges which falls peculiarly within the province of the engineer, a few words on the Siege of Sebastopol and the criticisms to which it gave rise, may not be misplaced.

The expedition to the Crimea was undertaken in the belief that Sebastopol would fall before a *coup de main*. In any other view, the strength of the allied armies which landed at Eupatoria was very insufficient. The information of which our generals were in possession, as regarded the strength of the garrison of Sebastopol, the nature of its defences, and the number of Russian troops in the Crimea, was very imperfect. The march of the Allies from Eupatoria to the Belbek was hazardous; their right flank rested on the sea, their left was exposed to an enemy of unknown strength. It is true the ships were an effectual protection, but the condition of that protection was fine weather; a storm would have deprived the army of their support. But the Allies forced the strong

position of Alma, and could judge with tolerable certainty of the number of Russian troops then in the Crimea; although they could not know how many were on the march towards it, nor how soon they could arrive. The army advanced to the Belbek. The questions which then presented themselves were: 1st. Is the great Severnaia fort on the north side capable of resisting a *coup de main?* 2nd, Will the fall of Sebastopol and the destruction of the Russian fleet necessarily follow the capture of that fort?

In answer to the first question, it was decided that the north fort was too strong to be carried by a *coup de main*, and that it would require a siege. As to the second question opinions were divided, but we now know that the possession by the Allies of Fort Severnaia would have had no effect on either the town or the fleet.

To besiege that fort without any secure base of operations, and with the continually increasing Russian forces gathering on their left flank and rear, the generals rightly considered would be too hazardous; the flank march round the head of the harbour became a necessity, and considering the depressed and disorganised state of the Russian army, it was safe. The Allies established themselves on the south side, and adopted the harbours of Kamiesch and Balaklava as their base.

They numbered about 50,000 men, a sufficient force, it may be thought, to justify an assault on the weak defences of Sebastopol, and on what we now know to have been the strength of its garrison, depressed as it was by the defeat of Alma*: the Allies would certainly

* No general would be justified in such an attack, unless he saw some confusion and fear to tempt a sudden blow. Had it

have got in, though they would have suffered fearfully in the assault, having no heavy guns to answer the Russian fire; but the Russian men-of-war were in the harbour, the garrison would have retired to the north side in perfect security, and the conquerors, in their already reduced condition, would have been incessantly exposed to the terrible fire of the ships. It would have been a conquest barren of all results, except the destruction of the conquerors. In declining such a risk the allied commanders acted wisely; they waited for reinforcements and resolved to besiege the place.

They were well provided with siege trains; but these were still on board ship, and after being landed the heavy guns with their stores had to be dragged over seven or eight miles of soft ground, great part of the way uphill, before they could be put in position to batter the defences. This required time, which was employed by the genius of Todleben in fortifying the place.

It was decided to commence the approaches at nearly three times the usual distance, in the belief that our preponderance of fire was sufficient to reduce the place by what is called the artillery attack. The newspapers proclaimed, exultingly, that the defences of the town would fall down before our fire, as did the walls of Jericho before the trumpets of Joshua; and there was more reason in this than has been generally supposed, for when the Allies opened their fire on the 17th October, the English guns soon silenced the greater part of those opposed to them; and had it not been for the unfortunate explosion of the French magazines, there is little doubt

been made in this case, its foundation would have been guess-work, not calculation; and guess-work is inadmissible in war.

that a successful assault might have been delivered on the 19th or 20th; and though the assailants would have suffered terribly from the fire of the ships in advancing to attack, yet after the defences were carried the heavy guns of the Allies could have taken up such a position as would soon have put an end to their power of further annoyance.

Owing to the explosion of the French magazines the bombardment was a failure, and the siege dragged on its weary length through the terrible winter.

It was neither the cold nor the privation of that winter which was so fatal to the English army, but the overwork; 20,000 Englishmen had the same amount of trench work and trench duty to perform as was allotted to the French force of 60,000. In addition to this, they occupied the most vulnerable point of the position. It is somewhat remarkable that in the march from Eupatoria the exposed flank was the left where the British were posted, and that after the march to the south side, the British were again to be found on the exposed flank, which was then the right. In both cases the French flank rested on the sea; in the last case they obtained the convenient harbour of Kamiesch, while the English had the miserable harbour of Balaklava as their base.*

Of all the absurdities that have been uttered with reference to this siege (and there have been a good many), none is greater than the assertion that it has established

* These inconveniences are all to be traced to divided command. Without that, the work would have been equally divided; and the occupation of Balaklava, which weakened the Allied position, and entailed greatly increased labour on the English force, would not have taken place.

the superiority of Mr. Ferguson's system of fortification, meaning thereby the superiority of earthworks over works with deep ditches revêted with masonry; but this is not treating Mr. Ferguson fairly, for his method does not alone consist in the employment of earthworks. The only similarity between his method and the fortifications of Sebastopol is, that earthworks exist in both.

The system on which Sebastopol was defended was the system of an unlimited supply of provisions and men from without, and of all the munitions of war from within; the system of a garrison superior to the besieging force (for the garrison and the Russian army in the field were synonymous), and exposed to no one of the disadvantages of a besieged town except the flight of shot and shell. Sebastopol was defended by the spade and pickaxe; the workmen employed were 100,000 men. If the Allies could have invested the town, the gigantic works which alone delayed its capture never could have been constructed, and under the terrible vertical fire of the Allies a garrison of 30,000 men would have disappeared in two months.

Again, the Russian earthworks were so knocked about by our fire that our soldiers could mount them without the aid of scaling ladders in every direction; if those works had been provided with deep ditches and masonry *revêtements*, although we now know that our vertical fire must have reduced the place, it never would have been taken by assault. A dozen breaches made during the day would, by means of the unlimited supply of labour at the command of the defenders, have been entrenched during the night so as to become impregnable. Let any one read Napier's description of the great breach at Badajos and the assault upon it, and then consider what would

have been our chances of success in assaulting the breaches of a place whose supply of labour, materials, and defenders was practically unlimited.

The experience of the siege of Sebastopol has only tended to vindicate the correctness of those principles of fortification, which have received the sanction of all great engineers since the time of Vauban.

EXAMPLES TO CHAPTERS II. AND III.

Example 1. — *Campaign of* 1756 *by Frederick the Great.* (See Plate I.)—Frederick's plan of campaign was to take Dresden the capital of Saxony, and afterwards to invade Bohemia and take Prague, with the intention of wintering there with his army, if successful. At the outset of the campaign Austria was unprepared to repel an invasion of Bohemia, and the army which Frederick had opposed to him in Saxony amounted to only 18,000 men.

Frederick had two armies on foot; the one commanded by himself, of 64,000 men, destined to invade Saxony; the other under Marshal Schwerin, of 30,000, was at Nachod on the eastern frontier of Bohemia, and destined to co-operate with Frederick in the invasion of Bohemia.

Frederick invades Saxony, and takes Dresden 6th September. The Saxon army having evacuated that city retires to the entrenched camp of Pirna.

Meanwhile the Austrians assemble two armies, the largest under Marshal Braun at Kollin, destined to advance into Saxony to disengage the Saxon army (reduced to 14,000 men) blockaded in Pirna; the other under Piccolomini to oppose Schwerin.

Frederick, not thinking it safe to leave the Saxon army in his rear, blockades Pirna in the hope of reducing it by famine, and detaches 30,000 men under Marshal Keith to Aussig, to observe the Austrian army coming from Kollin.

Here it is to be remembered that the Prussian aggregate force was very superior to that of the Austrians.

Frederick's own army of 64,000 was very superior both in numbers and quality, to that of Braun.

Schwerin's was likewise superior in number and quality to that of Piccolomini.

An examination of the map will show at once that Frederick was acting on two lines of operation at a great distance asunder, and separated by the Elbe.

The Austrians also employed two lines, but it is evident that these were interior to those of Frederick, since the troops upon them were clearly more easily unitable. The two Austrian armies were back to back, and could join by a direct march in a straight line; while Frederick and Schwerin, to unite, must either first defeat the forces respectively opposed to them, or must make a circuitous march behind the frontier of Bohemia.

Marshal Braun advances from Kollin to Budyn on his march to relieve Pirna, 23rd Sept. Frederick takes command of the army of observation and marches to meet Braun. The two forces encounter

at Lowositz where Frederick is victorious, 30th September. On the 14th of October the Saxon army surrenders at Pirna; but it is then too late to undertake any fresh operation, and the Prussians retire from Bohemia to winter in their own territories.

Remarks.—In this campaign Frederick violated Principle 3 by adopting exterior lines of operation, and neglected Principle 1, because, although his forces were very superior to those of his opponent, he was notwithstanding inferior at the decisive point. His strength was frittered away; he had 34,000 blockading the Saxons in their camp at Pirna; 30,000 under Schwerin paralysed by an Austrian force inferior both in numbers and quality on the eastern frontier of Bohemia; while at the decisive point he had only 30,000 men to oppose a superior Austrian army. Schwerin's force should have been united to Frederick's; it was a positive evil to the king to hinder the junction of Piccolomini with Braun, when the price paid for it deprived him of the services of Schwerin's army. Again, the entrenched camp at Pirna was defended by only 14,000 Saxons, and although very strong, it was far too extensive to be effectually defended by such a force, its circuit amounting to about twenty-five miles. Had Frederick assaulted this camp with his whole force, 64,000, he would certainly have taken it, in which case he would have had 64,000 men minus his

losses in the assault wherewith to fight Braun at Lowositz, in place of only 30,000. It is to be noted that Frederick was master of Dresden on the 6th September, and the advance of Braun to Budyn did not take place till the 23rd.

Example 2. — *Campaign of* 1757. (See Plate I.) — Frederick's object was to invade Bohemia, and to take Prague. During the early part of the year he had only to make head against the Austrian forces (as during the preceding year), than which his own were more numerous as well as of far better quality. He divided his army into four corps, of which Prince Maurice commanded one at Chemnitz on the extreme right; the king himself took command of the second at Lockwitz close to Dresden; the third, under the Prince de Bevern, was at Zittau on the northern frontier of Bohemia; the fourth, under Schwerin, always in Silesia on the eastern frontier of Bohemia.

The Austrian disposition was as follows: —

The 1st corps on the extreme left at Egra on the Eger, under the Duke d'Aremberg.

The 2nd corps at Budyn on the Eger under Braun, covering Prague.

The 3rd corps at Reichemberg (opposed to the Prussians at Zittau), under Count Konigseck.

The 4th corps in Moravia, under General Daun.

On the left bank of the Elbe, the two right corps of the Prussian army under Maurice and Frederick advanced from Chemnitz and Lockwitz, and, united, crossed the Eger river at Koschitz the 23rd April.

The two left corps of the Austrian army under D'Aremberg and Braun, having united at Budyn, fell back upon Prague where Prince Charles of Lorraine took the chief command. He carried the Austrian army over to the right bank of the Moldau and encamped on the heights of Ziska.

The Prussians under Frederick followed the Austrians in their retreat from Budyn, and arrived before Prague on the left bank of the Moldau, the 2nd May.

Turn now to the operations on the right bank of the Elbe.

Bevern advanced from Zittau, 20th April, dislodged the Count Konigseck from his position at Reichemberg, and obliged him to fall back to Liebenau (on the direct road to Prague by Brandeis).

Schwerin entered Bohemia at Trotenau the 18th April, and marched by Gitschin on Jung Bunzlau in the hope of cutting off the retreat of the Count Konigseck on Prague. But warned in time Konigseck quitted Liebenau, the 24th, and marched with all haste to Brandeis, where he crossed the Elbe, and thence to Prague where he joined Prince Charles of Lorraine on the 3rd May, the day after

that on which Frederick arrived before that city on the opposite bank of the Moldau.

Schwerin having joined Bevern, their united force followed the retreat of Konigseck, and encamped on the right bank of the Elbe opposite Brandeis, the 4th May, until they should concert measures with the king.

Thus on the 4th May the army of Frederick before Prague and that of Schwerin opposite Brandeis were separated by two rivers, the Moldau and Elbe, and had moreover between them to oppose their junction, 70,000 Austrians under Prince Charles, supported by the fortress of Prague.

Nevertheless on the 5th May the king threw a bridge across the Moldau, and passed to the right bank with 20,000 men, leaving Marshal Keith on the left bank with a force nearly equal. This was accomplished without opposition although almost within cannon shot of the Austrian army. On the same day Schwerin crossed the Elbe at Brandeis and advanced to Mischitz. On that night the two armies were within nine miles of each other.

On the 6th at daybreak they were united at Prosick.

On the 6th also General Daun, who was marching with the army of Moravia, 30,000 men, to reinforce Prince Charles, arrived at Boehmisch Brodt, two short marches from Prague.

On that day Frederick attacked and defeated Prince Charles in the battle of Prague. If Frederick had been defeated his only line of retreat was on Brandeis, for he could not have recrossed the Moldau at Prague in the face of a victorious army which was in position almost within cannon shot of his bridge.

Yet in that battle he carried his whole army by a flank march from right to left to attack the Austrian right wing, thus completely abandoning his line of retreat on Brandeis, and placing himself astride on the road to Boehmisch Brodt, by which 30,000 fresh Austrian troops under Daun were advancing on his rear.

Observations.—Few campaigns have been more faulty in conception, more fortunate in execution, than that which has just been sketched.

Frederick employed three lines of operation (we may consider both the Prussian and Austrian lines on the left bank of the Elbe as single). These three lines were evidently exterior to the two Austrian lines employed by Braun and Konigseck.

A more flagrant violation of Principles 1 and 3, and of the Maxims 1, 3, 4, 7, and 8, can hardly be conceived.

Of Principle 1, because Frederick exposed repeatedly fractions of his army to be beaten in detail by the mass of the enemy. On the 5th, the whole

Austrian force might easily have overwhelmed Frederick's 20,000 men, isolated after crossing the Moldau; or Schwerin's army, by marching against it after crossing the Elbe; or Ziethen's corps on the left bank of the Moldau might have been overwhelmed on the night of the 5th by leaving 15,000 Austrians to mask their position on the heights of Ziska, and by carrying the remainder through Prague to the left bank to attack Ziethen, having simultaneously burnt the king's bridge to prevent succour.

Of Principle 3, as to exterior lines, because Prince Charles with 70,000 men supported on a fortress, was in position between the armies of Frederick and Schwerin which were besides separated by two great rivers.

Of Maxim 1, because he abandoned his line of retreat on Brandeis during the battle of Prague. If defeated, he would have been ruined; he could not have regained that line, and he must have retreated, pursued by a victorious enemy, along a line by which 30,000 fresh enemies were advancing.

Of Maxim 3, because the union of the different corps of his army took place under the very nose of the enemy.

Of Maxims 4, 7, and 8, evidently. It may be remarked also, that although the two Austrian left lines of operation were interior to the Prussian three

lines, yet as a whole the Austrian *three* lines (including that from Moravia) were exterior to those of the Prussians.

Example 3.—*Campaign of Pultowa, Charles XII.* (See any good map.)—In 1708 Charles invaded Russia. He commanded in person an army of 35,000 men on the eastern frontier of Poland, which was his base of operations. To co-operate with him, 20,000 men under Count Lewenhope landed from Sweden at Riga. He had therefore 55,000 of the best troops in the world employed in this invasion, and he had besides 15,000 men in Friedland.

Charles marched from Grodno in June, traversed the forest of Minsk, forced the passage of the Beresina at Borisov, and beat an army of 20,000 Russians; passed the Borysthenes at Mohilov, and defeated on the 22nd September near Smolensko, a force of 16,000 Russians.

Meanwhile the Count Lewenhope, with his 20,000 men and a convoy of 8000 vehicles, was *en route* from Riga to join Charles.

Smolensko was the natural point of junction, since the left flank of Lewenhope's line of operation from Riga was covered up to that place by the Dwina.

At Smolensko Charles was only ten marches from Moscow. Had he awaited the junction of Lewen-

hope who was only twelve days behind him, and then marched on Moscow, he would probably have dictated peace to Peter at the gates of that capital. Had he even marched on Moscow on the 22nd September without waiting for Lewenhope, he would according to all probability have succeeded equally; for Peter was only able on the 7th October to assemble 40,000 men, and Charles had a victorious army of nearly 30,000, composed of troops who, from their intrinsic value, no less than from the moral effect of their leader's prestige and their late victories, compensated, to say the least, the inequality of numbers.

But Charles did neither; he turned off from Smolensko and made a long march of about 600 miles to the Ukraine, for the sole advantage of raising the Cossacks and being joined by Mazeppa, who brought him only 6000 men; thus abandoning his line of retreat and the advancing corps of Lewenhope to the attacks of Peter. Accordingly Lewenhope, who crossed the Borysthenes at Mohilov on the 3rd October, twelve days after Charles, was attacked on the fourth day of his march towards the Ukraine by Peter with 40,000 men. The result was that he only brought to Charles 5000 men, having lost the remainder and all his convoy.

Observations.—If Charles's design was to effect the union of the two armies at Smolensko, and after-

wards march to Moscow, there is no fault to be found with his double line of operations. He was strong enough to advance to Smolensko and maintain himself there; his forward position at that place, as well as the river Dwina, covered his communications with Riga whence Lewenhope was advancing; but, by turning off from Smolensko without waiting for Lewenhope, he violated all the principles.

Principle 1, because he exposed a fraction of his force to be overwhelmed by the mass of the enemy.

Principle 2, because he enabled Peter to act on his communications without exposing his own.

Principle 3, because the Russian army being at a few days' march from Smolensko when Charles marched south; and there being an interval of twelve marches between him and Lewenhope, it is evident the Russians were moving on interior lines.

Compare this long march in an enemy's country of 1000 miles from Riga to the Ukraine, without a single *point d'appui*, with Napoleon's manner of conducting a similar operation.

Example 4. — *Campaign of* 1800, *in Germany.* (See Plate II.) — In the month of January, 1800, the French armies were distributed as follows: —

One was in Holland, under Brune.

A second was on the left bank of the Lower Rhine, under General Le Courbe.

A third was in Switzerland, under Massena.

A fourth in Italy, in a disorganised and almost starving condition.

Napoleon's design was to act with two armies, the one on the Danube; the other, under himself, in Italy.

For this purpose he transferred Massena to the command of the army of Italy, and united the armies of Switzerland and the Lower Rhine into one under the name of the army of the Rhine, which he placed under the command of Moreau who from his previous campaigns had a perfect knowledge of the intended theatre of war in Germany. The army of the Rhine amounted in a short time to 150,000 men, composed of experienced soldiers and well provided with every necessary.

Austria had two large armies; one in Germany of 120,000 men under Marshal Kray, was destined to remain on the defensive to cover Germany; while the other in Italy of 140,000 men under Marshal Mélas, was to act vigorously on the offensive, to take possession of Genoa, Nice, and Toulon, and to be joined under the walls of the last-named place by the English and Neapolitan forces amounting respectively to 18,000 and 20,000 men. The French had, to oppose Mélas in Italy, only 40,000

men, who guarded the Apennines and the heights about Genoa. But Napoleon had prepared his famous army of reserve amounting to 35,000 men, principally old soldiers drawn from the war of La Vendée, with which he intended to break out from the frontier of Switzerland on to the Po and to take the army of Mélas in rear.

The disposition of the Austrian army of Germany was as follows: —

Kray with his headquarters was at Donaueschingen. His whole force was divided into four corps: the right, under Starray, was on the Maine, which the army of Holland was destined to hold in check; the left, under the Prince of Reuss, in the Tyrol; the two centre corps were on the Danube, but had four strong advanced guards pushed towards the Rhine; one under Kienmayer opposite Kehl; a second under Giulay in the Brisgau; a third under Prince Ferdinand in the neighbourhood of Basle; a fourth under the Prince de Vaudemont opposite Schaffhausen.

Under these circumstances the French army of the Rhine united should have acted vigorously against the separated Austrian corps in succession. Moreau possessed the re-entering angular base formed by the Rhine from Strasbourg to Basle and from Basle to Constance; and the principles of war clearly indicated that he should break out into the theatre

of war as near Constance as possible, by which he would have all the Principles in his favour. It will now be told what he actually did.

Moreau's headquarters were at Basle. His army consisted of four corps of infantry, a reserve of heavy cavalry, and two detached divisions commanded by Collard and Moncey in Switzerland.

The four corps were thus employed: the left under General Sainte Suzanne passed the Rhine at Strasbourg the 25th April; the next under Saint Cyr passed the same day at Brisach; Moreau, at the head of the third corps, which consisted of the reserve, crossed on the 27th at Basle; and the extreme right corps, under Le Courbe, crossed on the 1st May near Stein, between Schaffhausen and Constance.

Sainte Suzanne advancing from Kehl, the 25th, defeated an Austrian corps of 12,000 men which was in position in front of Offembourg; but on the 27th Moreau ordered that general to recross the Rhine at Kehl, to march up the left bank to Brisach, there again to pass to the right bank, and to place himself at Neustadt in a second line to the corps of Saint Cyr and Moreau, who had taken post, Saint Cyr at Stühlingen on the Wuttach river, and Moreau at Neukirch, between that river and Schaffhausen.

Such was the position of three of the corps of the

French army, when the fourth corps crossed the Rhine at Steinon the 1st of May, and advanced on the fort of Hohentwael, which capitulated.

On the 2nd of May the French army remained inactive in its positions, which extended over a line oblique to the Danube of forty-five miles, from Hohentwael on the right to Neustadt on the left.

Kray thus had time to unite some of his scattered detachments. On the 2nd of May he was in position in front of Engen, guarding the country between his left and the Lake of Constance with 12,000 men under the Prince de Vaudemont.

Kray had magazines at Engen, Stokach, Moeskirch, and Biberach, which places were on his direct line of retreat to Ulm.

On the 3rd of May, at daybreak, the three corps which were at Neukirch, Stühlingen, and Neustadt advanced on Engen; but those of Sainte Suzanne and Saint Cyr did not arrive at that place in time to take part in the battle which Moreau waged unsuccessfully during the whole day with Kray. The force which Moreau brought into action amounted only to 40,000 men, rather less than that of the Austrians. Victory was inclining to the Austrians when Kray learnt that the Prince de Vaudemont, on his left, had been defeated by Le Courbe, who had advanced at daybreak from Hohentwael, and

after driving back De Vaudemont to Moeskirch, had gained possession of Stokach. Kray, therefore, was obliged to abandon Engen, and to fall back on Moeskirch, there to unite with De Vaudemont; this he accomplished on the 4th by a circuitous march. His magazines at Engen and Stokach were taken; he ordered the immediate transfer of those at Moeskirch and Biberach to the Danube; and considering the retreat on Ulm before such a superior force to be no longer safe, he designed to place the Danube between him and his numerous enemies by crossing that river at Sigmaringen.

On the 4th Le Courbe advanced from Stokach on Moeskirch, and Saint Cyr marched from Engen to Liptingen.

Le Courbe, in his advance, was followed at a considerable distance by Moreau with his corps. Le Courbe approached Moeskirch on an extended front of seven miles, and he soon found himself engaged with the whole Austrian army in position. He was in great danger until he was supported by the arrival of Moreau in the afternoon; but all the efforts of the French to force the Austrian position were unsuccessful. Saint Cyr, whose corps if present on the field would have decided the battle, did not reach Liptingen, where he was still about ten miles distant from the field of battle, until nightfall.

During the night Kray retreated on Sigmaringen, where he immediately began to cross the Danube; but the half of his army was still on the right bank when Saint Cyr appeared on the 6th on the heights which command the river; if Moreau had followed up his retreating enemy half of the Austrian army would have been destroyed; but Kray accomplished his retreat without loss.

Some days after the battle of Moeskirch Moreau again dislocated his army. Le Courbe was detached to the Tyrol. Saint Cyr advanced on Buchau, having Moreau in second line behind. Sainte Suzanne was directed to move by the left bank of the Danube to Geissingen, where he was separated by the river from the rest of the army.

Kray, informed of the detachment of Le Courbe and Sainte Suzanne, recrossed the Danube at Riedlingen and advanced to Biberach, where he took position to bar the progress of Moreau towards Ulm.

On the 9th, Kray, attacked and defeated at Biberach, marched by his left to the river Iller, but Le Courbe attacked him at Memmingen and drove him back on Ulm which was provided with an entrenched camp, in which the whole Austrian army, with the exception of 20,000 men in the Tyrol under the Prince of Reuss, was now united.

Ulm was a strategical point of great importance.

It contained large magazines of provisions, forage, and all the munitions of war; it possessed two stone bridges which were protected on the right bank by strong entrenchments, and on the left bank by the fortifications of the town; it was thus a double *tête-de-pont.*

The possession of Ulm by Kray enabled him to operate on either side of the Danube at pleasure, and thus to protect at the same time Bavaria and Suabia, and to cover Bohemia and Austria. His supplies of all descriptions augmented daily, and he seemed resolved to maintain himself in this central position notwithstanding the inferiority of his force and the checks he had experienced.

Moreau thought to oblige him to abandon his position by advancing. Accordingly Le Courbe quitted Memmingen and approached the Leck. Saint Cyr followed him in echellon along the right bank of the Danube. Sainte Suzanne approached Ulm by the left bank.

Of the two divisions composing the corps of Sainte Suzanne, one commanded by Le Grand took post at Erbach on the Danube, about six miles above Ulm; the other, commanded by Souham, on the river Blau, at an equal distance from the place. The front occupied by these two divisions extended six miles. Sainte Suzanne had no bridge over the Danube; he was separated by that river from the French army

and was exposed to attack from Kray's united force.

On the 16th at daybreak the Archduke Ferdinand marched from Ulm against Le Grand, while another column attacked Souham; both French divisions were driven back, the distance between them was increased, and their communication with each other intercepted.

Sainte Suzanne ordered Le Grand to quit the Danube and to unite with Souham by a circuitous march; Saint Cyr, hearing the cannonade from the right bank, retrograded with his rear guard, and placed batteries on the right bank so as to sweep the road between Ulm and Erbach; and the Archduke, believing that the French would cross the river in force and cut him off from Ulm, returned to that place.

Moreau, justly alarmed for the safety of Sainte Suzanne, arrested the movement towards the Lech; he recalled Le Courbe, sent Saint Cyr across the Danube to Erbach to support Sainte Suzanne, and with his own corps and that of Le Courbe took post on the Iller. His army thus occupied a line of nearly forty miles, the left being on the Blau, the right on the Iller, and was separated into two nearly equal parts by the Danube.

After passing several days in this position Moreau decided to unite his whole force on the right bank;

accordingly Saint Cyr and Sainte Suzanne crossed the river; Saint Cyr advanced to the river Günzt, while Sainte Suzanne took post astride on the Iller. Le Courbe advanced to the Lech.

Moreau now occupied a front of sixty miles, his right on the Lech, his left on the Danube.

On the 24th Kray detached a force across the Danube, and attacked both divisions of Sainte Suzanne at once. The combat lasted all day without any decisive success; and at nightfall the Austrians retired.

When the news of this combat reached him, Moreau again changed his plan. Le Courbe was a second time recalled from the Lech, and the army was in march to concentrate on its left, when Kray, on the 4th June, again crossed to the right bank with 16,000 men, and attacked the corps of Sainte Suzanne which fell back fighting before the Austrians all that day, and whose position had become very critical, when a division of the corps of Saint Cyr, detached across the Iller by the bridge of Kellmuntz, arrived to its support. Kray retired.

Moreau then concentrated his whole force on the Iller.

After remaining several days in this position, encouraged by the defensive attitude of Kray who remained shut up in his entrenched camp, Moreau resumed his plan of advancing into Bavaria.

Le Courbe passed the Lech for the third time, and

on the 10th, 11th, and 12th of June, the rest of the army was approaching that river. Six more days were spent in indecision; at length Moreau determined to pass his whole army to the left bank of the Danube.

Accordingly the corps of Sainte Suzanne was recalled to the Iller, and remained on that river in observation of Ulm, while on the 18th the remaining corps approached the Danube as follows, viz.: Le Courbe opposite Hochstett; Moreau opposite Dillingen; Grenier (who now commanded Saint Cyr's corps) at Günzbourg.

Kray guarded the line of the river from Ulm to the mouth of the Lech.

On the 19th at daybreak Le Courbe crossed the Danube over the bridge of Blindheim which he had repaired, and led one division six miles down the river to Schwoningen, where he defeated 4,000 Austrians detached from Donauwerth; while he sent the other two divisions up the river to Lauingen, which were attacked unsuccessfully by another body of Austrians detached from Ulm.

Meanwhile Moreau crossed with his corps by the bridge of Dillingen.

Grenier, who endeavoured to repair the bridge of Günzbourg, was prevented by the Austrian general Giulay, and was obliged to cross after Moreau by the bridge of Dillingen.

As soon as Kray learnt that the passage was effected he resolved to retire, which he did, under the protection of a corps of cavalry placed on the Brenz river, by Neresheim and Nordlingen, and arrived on the Wernitz, behind which river he took post on the evening of the 23rd June.

From the 20th to the 23rd Moreau remained inactive.

Richepanse, who had succeeded to the command of Sainte Suzanne's corps, invested Ulm.

Le Courbe returned to the right bank of the Danube, and marched across the Lech upon Neubourg, where Kray was in position with 25,000 men.

Le Courbe attacked him and was repulsed; but during the succeeding night Kray, fearing to be overwhelmed by the whole French army, passed over to the left bank and marched to Ingolstadt, where he again crossed the river and carried his headquarters to Landshut behind the Iser.

Moreau established his headquarters at Augsbourg.

Sainte Susanne was advancing through Franconia with two fresh divisions from Mayence, to which place he had been sent by Moreau.

Le Courbe was sent with 20,000 men against the Prince de Reuss, who during all this time occupied the defiles of the Tyrol. The prince retired behind the defiles.

On the 15th of July this campaign was terminated by the armistice of Parsdorf.

Observations.

Moreau acted in violation of the Maxims (a.) and (b.) of Chapter II., in neglecting to avail himself of the shelter afforded him by the Rhine to as great an extent as possible in marching towards his object. In accordance with those maxims he should have marched behind the Rhine to Schaffhausen, and have broken out into the theatre of war from between that place and Constance, which would have enabled him to apply Principle 2, by acting on the rear of those bodies of the enemy which were observing the Rhine; and Principle 1, by attacking those bodies in detail. Or he would have been able to reach Ulm before them, the possession of which place, on the communications of the Austrians, would have decided the campaign in the first fortnight.

Moreau violated Principle 1 in attacking Kray with an inferior force at Engen, when he had two corps within reach whose presence would have raised his army to double that of the enemy.

Moreau also violated the following maxims, viz.: — Maxim 3, because he crossed the Rhine at three different points far distant from one another, and designed to unite his divisions within reach of the enemy; Maxims 4 and 7, first, in having several lines

of operation from the base of the Rhine, the communication between which was exposed to flank attack from the enemy (Napoleon particularly enjoined him to operate by one line only which should lead from Stein upon the enemy's rear); second, in employing two lines of operation around Ulm, separated by the Danube, which proceeding exposed one of his corps to be beaten separately in disregard of Principle 1, and gave his enemy a great advantage in respect to interior lines, Principle 3.

He also lost a great opportunity of applying Principle 1, in neglecting to follow up Kray in his retreat from Moeskirch to Sigmaringen, where he might have destroyed one half of the Austrian army separated from the other half by the Danube.

His passage of the Danube with three of his corps on the 19th below Ulm, violated all the principles.

Principles 1 and 3, because Kray might have availed himself of the interior lines which Moreau's dispositions afforded him to fall upon the isolated French corps on the right bank in front with his whole force, while the Prince de Reuss advanced on his rear, to utterly destroy that corps, and to intercept the French line of communication by the right bank which that corps was left to guard. If Moreau thought proper to pass to the left bank of the Danube, he should have done so with his whole army in one day, and marched immediately on Ulm,

there to attack the right flank of the Austrian army which guarded the line of the river from that place to Donauwerth. In the event of Kray quitting Ulm to act on the French line of communication by the right bank, Moreau would have possessed himself of the entrenched camp at that place.

Moreau's proceedings in this campaign were a series of faults; he showed himself completely wanting in that decision and energy which mark a great general; he never followed up a success; he repeated three times in six weeks the same demonstrations without result. In short he was completely outgeneraled by Kray, whose aim was to detain Moreau in the neighbourhood of Ulm, and so prevent his striking any decisive blow at a vital part of the empire.

Although Kray showed himself superior to Moreau, his faults were serious.

1st. He disseminated his army along the line of the Rhine in too forward a position, since his rear was exposed to attack by a French force operating from Schaffhausen.

2nd. He established his magazines at Stokach, Engen, and Moeskirch, close to a part of the French base. If Switzerland had been friendly or neutral his magazines in those places would have been well placed, since they would in that case have been

covered by the defiles of the Black Forest; as it was, they were quite at the advanced posts.

3rd. He showed want of energy in not having completely destroyed the two divisions of Sainte Suzanne, when the latter were within two hours' march of his whole army on the 16th May, and isolated from succour by the Danube; again on the 26th May, when the French were disseminated over sixty miles from the Danube to the Lech, he should have attacked their left flank with his whole force, calling up the Prince of Reuss to reinforce him. In his place Napoleon would have marched from left to right of the French front, defeating their corps in detail.

It will be excellent practice for the student to compare this campaign of Moreau with that of Napoleon in the same year with his famous army of reserve, and to remark how completely all the unfavourable remarks on the operations of Moreau must be reversed in speaking of the manœuvres of Napoleon.

DEFINITIONS.

Tactical Points.

All points on a field of battle which may impede the advance of an enemy to attack your position, or which may facilitate the advance of your army to attack the enemy's position, are *tactical points*, and should be occupied.

Tactical decisive Points.

All points on a field of battle which, when occupied by your army, will enable it to make an attack on the enemy whose success would be decisive on the issue of the engagement, and

All points on a field of battle in possession of the enemy which will enable him to frustrate your attack on any other part of his position, or which will enable him to impede or intercept your line of retreat, if repulsed, — are *tactical decisive points for offence.*

Reverse the conditions, and you will obtain the tactical decisive points *for defence.*

The flanks and most advanced salients of the position are, in general, the most decisive points.

The flanks, because being only defended by the

fire of a small part of the position, they offer an enemy great facilities for attack, which, if successful, will enable him to take in flank the troops occupying the position, or to act upon their line of retreat.

The salients, because strong batteries are placed at those points which cross their fire on the ground over which an enemy must advance to attack, and because an attack will probably be unsuccessful so long as those points remain in possession of the defenders.

Orders of Battle.

A line of battle may be straight, or it may be curved either concavely or convexly towards the enemy.

Of these three orders the convex towards the enemy is the best, as a general rule, because the flanks which are the most vulnerable points are the furthest removed from attack; the enemy, in marching to assail either flank, exposes his own more than if the defenders occupied a straight line. Troops sent to reinforce any point move on the chord of the arc, i. e. on the shortest possible line between any two points; and the line of retreat is the best covered and can be the most easily gained from all parts of the position. The general disadvantage attaching to this order is that the fire of the position is divergent.

Of the two remaining orders the concave is the worst, because the flanks are the most exposed to attack; because the line of retreat is the worst covered, and requires the longest march to reach it from all parts of the position; and because troops sent to reinforce any point must move on the circumference, i. e. on the longest possible line between any two points in the curve. The general advantages of this order are, that an enemy advancing against the centre exposes both his flanks more than if the defenders occupied a straight line, and the fire of the position is convergent.

The straight order offers no advantages of flank attack to the defenders; troops sent to reinforce any point must move on a line equal to the circumference of the curved order (the length of the straight line being equal to that of the curved line); the line of retreat is better covered than in the concave, and worse than in the convex order.

In the accompanying diagram the three lines *a b* are of equal length; *c*, the centre point of each; *c d*, the line of retreat.

In the convex order (*fig.* 1), troops moving from *a* to *c* march on the chord *a c*.

In the concave and straight orders (*figs.* 2 and 3), troops moving from *a* to *c* must march on the dotted lines *a c*, equal to one another in the two last figures, but longer than the straight line *a c* of *fig.* 1.

It is evident that in Fig. 1 the line *c d* is the best covered, and the most easily reached from all parts of

Fig. 1. Fig. 2.

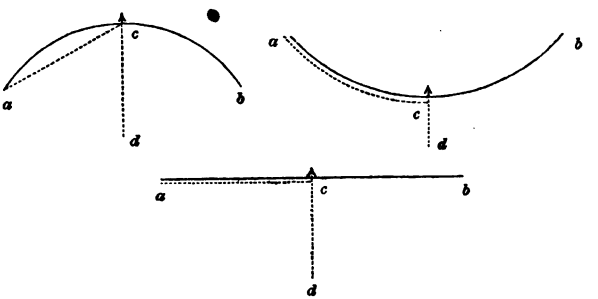


Fig. 3.

the line *a b*; and in Fig. 2 that *c d* is the worst covered, and the least easily reached from all points in *a b*.

The task of the commander of a modern army is far more difficult than was that of an ancient general. The Roman order of battle was always the same, viz. in three lines, at a distance from one another of about 100 yards, the cavalry on the flanks.

In modern armies the art of occupying a position is submitted to so many considerations that it is impossible to lay down any absolute rule.

It is the business of a commander intelligently to combine the general principles of the art of war in the manner best suited to actual circumstances.

CHAP. IV.

ATTACK AND DEFENCE OF POSITIONS.

Maxim 10.—THE excellence of a position is always relative,

1st. To that occupied by the enemy.

2nd. To the number of troops intended to line it.

3rd. To the composition of those troops.

1st. It is evident that a position being taken up either for offence or defence, its excellence must depend on the nature of the enemy's position.

2nd. That although a position may combine all the general requirements hereafter to be stated, it cannot be a good position for any given army unless that army be able effectively to occupy or defend it. In other words, it must not be too extensive for the number of your troops to line it well, generally in two lines and a reserve. This is a deduction from Principle 1; for if you occupy an extended position with an inadequate force, every portion of your line will be weaker than it ought to be, and the enemy will thereby be enabled to bring to bear on a given point a larger force than that which you can there oppose to him. The above however like all general

rules, must yield to actual circumstances. A general may be forced to occupy a more extended position than the number of his troops would authorise in the abstract, to avoid a greater evil, such for example as leaving a height unoccupied, on which the enemy might establish batteries to enfilade his line. In such a case the weaker portions of your line must be artificially strengthened, and the best must be made of actual circumstances.

3rd. If either infantry, cavalry, or artillery unduly preponderate, common sense indicates that the position chosen must present ground favorable to the action of that particular arm.

For infantry, ground where it can act with advantage, and where the other two can not. Ground broken by ravines or dips, the more nearly parallel to the front of the enemy the better; a close country intersected with enclosures, and sprinkled with houses. Such ground is unsuited to the action of artillery and cavalry.

For cavalry, open ground where horses can gallop unimpeded.

For artillery, gently undulating ground unbroken by ravines, the harder the better.

From this it follows that, in disposing your three arms, heights should be occupied by infantry; cavalry should be in the plains; artillery on commanding ground (not too high), whence its fire may

sweep the surface of the ground as far as the guns can range, without plunging into it.

Maxim 11.—A position must not be commanded by heights in the direction of the enemy within artillery range.

Maxim 12.—Every position must cover the line of communication of the army with its base.

Maxim 13.—The lines by which the army must retreat from its position, if defeated, must be as numerous and easy as possible.

In forming a line of battle, special respect must be had to the line or lines by which the army may be obliged to retire. The more directly these lead towards the base of operation the better. The more of these lines available, the greater the security in which the army will fight, and the greater the probability that, if defeated, it will be able to effect its retreat without any overwhelming disaster.

Maxim 14.—The part or parts of a line of battle which are in front of any line or lines of retreat must be made the strongest (if not so already from natural causes), either by entrenchments, or by posting the greatest force at such parts of your line.

If the enemy attack and break that part of your line which is in front of your line of retreat, your army, divided into two parts, may be forced back towards the flanks, and the enemy may gain possession of your line of retreat.

Maxim 15.—Every position must afford easy communication, in rear of the line, between the different parts of your line of battle.

This is a deduction from Principle 1; for without the power of moving troops rapidly from one part of your line to every other, the enemy would be enabled to apply the principle at your expense, by bringing a superior force to bear upon that part of your line which you are unable to reinforce. Therefore where easy communications do not exist they must be made, by throwing bridges across streams or ravines, causeways across marshes, and levelling walls or hedges, in such a manner that artillery may be able to pass rapidly from one end of the line to the other.

The advantage of the communication between different parts of the line being in rear, is twofold.

1st. The flank movement of the troops which march to reinforce any threatened portion is protected by the front of the line.

2nd. Such movements are thereby more likely to be concealed from the observation of the enemy, and they should always be entirely concealed from such observation, if possible.

Maxim 16.—The ground in front of your position should be such as to impede the movements of an enemy advancing to attack you, and should be so completely commanded by your position as to

insure its being swept by your artillery to the full extent of its range.

Such ground will be more slowly traversed by the enemy; he will be exposed for a longer time to the fire of your guns, which will have the effect of disordering his march and damping his ardour in a degree proportioned to the difficulty of the ground he has to pass over. The impediments to the march of an enemy to attack your position in front may be of different descriptions:—

1st. The most effective is a large river or impassable marsh running parallel to your front.

2nd. Villages, which may in a short time be converted into strong posts, and occupied by your troops, so situated that the enemy must take them before advancing beyond them.

3rd. Any favourable ground (naturally or artificially strong, or both) on the line of the enemy's advance, the occupation of which by your troops will delay his march.

In all the above cases it is necessary that the obstacles to the march of the enemy shall be under the full fire of the guns of your position, otherwise the troops posted for their defence may be captured.

It is desirable that the fire of your guns shall cross in front of the points where the enemy may cross the river, or in front of the villages or posts occupied by your troops as advanced posts.

Maxim 17.—Every position must afford secure protection to the flanks of your army.

This is a deduction from Principles 1 and 2, since its observance will prevent the enemy from applying them at your expense.

Principle 1, by his placing himself in such a position as will enable him to attack the flank of your line, the nature of which manœuvre is to bring masses of the attacking force in contact with successive fractions of the line attacked.

Principle 2, by turning your flank and acting on your line of retreat.

Strong natural obstacles afford the best protection, such as mountains, large rivers, impenetrable woods, marshes, &c. Where these do not exist the flanks must be strengthened by artificial means.

Maxim 18.—A position cannot be too strong; lose no opportunity of strengthening it by means of field works.

Napoleon says:—"The natural positions which are generally met with cannot protect an army from the attacks of a superior force without the aid of art."

Towards the end of the Peninsular war no position was taken up without entrenching; first, the guns were covered, then the weakest parts of the line.

Maxim 19.—Occupy your position in such a manner that you can defend a part of it with a

smaller force than that which the enemy can bring against it, so that the greater part of your force may be available to assail the weaker of the enemy.

e. g. If two armies A and B, of 20,000 men each, occupy lines of equal length; but A, by reason of the ground being naturally stronger on the right half of his line, or by reason of entrenchments, is able to occupy that half effectively with only 5000 men, while the force of B is equally disseminated, then (to use a technical term) the 5000 of A *contain* 10,000 of B; while A has 15,000 wherewith to overwhelm the opposing 10,000 of B.

Jomini says, that to insure the success of an attack made by one wing which is reinforced for that purpose at the expense of the other, it is necessary to refuse the weakened wing. This is undoubtedly true, if every part of your position were occupied (before reinforcing one wing) only in sufficient strength to defend each part from attack; but this is only a particular application of the above maxim which is general.

This maxim is a deduction from Principle 1, as it prescribes the mode of acting to enable you to apply that principle.

An important corollary may be drawn from the above, viz.: —

If your force is superior to that of the enemy, you should not therefore occupy a greater front than that

of the enemy, but hold your surplus troops in hand ready to take advantage of any opening that may be afforded. You will thus be able to insure the superiority at the decisive point and time.

If A and B consist respectively of 20,000 and 10,000 men, and A occupies a front twice as extended as that of B, then A loses the advantage of numbers, for B can bring to bear on an opposite part of A's line a force equal to that which can oppose it, and that part may be broken before succour from the distant portions of A's line can arrive.

It must never be forgotten that *it is not the number of troops ranged in order of battle which decides the victory, but the number which is actually put in vigorous action by a commander.*

The battle of Prague in 1756 exemplifies this.

All the different orders of battle, ancient and modern, may be reduced in principle to this maxim (19). In ancient history the battles of Leuctra, Mantinæa, Arbela, Cannæ, and the Metaurus, furnish examples. So, indeed, do nearly all battles which have been skilfully fought.

Maxim 20. — When on the eve of a battle recall all your detachments, do not neglect one however small, one battalion the more sometimes decides the day. (*Napoleon.*) From Principle 1.

In the same manner as no part of a position can be too strong, a master of the art of war will never

consider that he has too many troops, no matter how small may be his enemy's force.

Maxim 21. — Never detach a force either on the eve or on the day of a battle for the purpose of co-operating with your main body in attacking the enemy, unless your communications with the detachment can be constantly maintained. From Principle 1.

Unless communication is maintained there can be no concert. Nothing should be left to accident. If a force be detached to such a distance that its communication with the main body is not constant and *rapid*, however well a combination may be conceived a thousand accidents may disconcert it.

If a body of troops be detached to a distance from the main army round a flank of the enemy for the purpose of attacking the enemy in rear in an approaching battle, a watchful enemy will learn the movement and overwhelm the detachment.

Examples of this are found in the battles of Hastenbeck, Creveldt, and Torgau, during the Seven years' war.

Maxim 22. — Never leave intervals between the different divisions of your line of battle, where the enemy might penetrate, unless to draw him into a snare. (*Napoleon.*)

If the enemy break in at such interval in sufficient force, he may attack one of the separated portions of

an army in flank, while he attacks the same portion in front, thus insuring its defeat; while he prevents the other separated portion from succouring the first by threatening it with attack by a smaller force in accordance with Maxim 19. In such a case, that one of the separated portions should be chosen for attack whose defeat would inflict the greatest damage on the army; for instance, if the army's only line of retreat lay behind one of the portions, the other should be chosen to be assailed in front and flank, as it would thereby be cut off from its line of retreat. This would be to apply Principles 1 and 2. Examples of the breach of this maxim are supplied by the battle of Prague in 1756, and of Salamanca during the Peninsular war.

It results as a corollary from the last maxim, that you must never weaken any part of your line to such an extent that a vigorous attack upon it by the enemy will probably succeed, and enable him to act as has been above described; also, that unless you have a great superiority of force, it is dangerous to attack an enemy's line by both extremities at once; for as both attacks must be reinforced at the expense of your centre, your centre becomes weakened and a counter attack upon it by the enemy may succeed.

The battles of Neerwinden in 1793, and Stockach in 1799, are examples of this.

It results also from the above, that the centre of a line of battle should not be formed of cavalry.

For cavalry must give way before a combined attack of the three arms, and the centre is pierced. It may be thought that in the case where a position consists of two ranges of hills separated by a plain, the plain being favourable to the action of cavalry, that arm should occupy the interval between the heights on which the infantry is posted; but in this case the centre would be equally pierced, and the communications of the army occupying such a position at the mercy of the enemy.

The loss of the battles of Minden and Blenheim by the French, was caused by ignorance of this.

Maxim 23. — Never attack with a fraction of your force, when a short delay will enable you to attack with masses.

This would be to violate Principle 1.

The temptation or supposed necessity may sometimes be great, but yielding to it will almost invariably increase the evil it is intended to remedy. The battle of Torgau in 1760 is a signal example of this; and although Frederick was victorious in that battle, he was so in spite of his faults and because of his extraordinary good fortune.

Maxim 24.—Nothing can be more rash or contrary to the principles of war than to make a flank march before an enemy in position. (*Napoleon.*)

This supposes that the flank march is made within sight of the enemy. Frederick the Great owed the loss of the battle of Kollin, and Marmont that of the battle of Salamanca, to the violation of this maxim.

Maxim 25. — There are two ways of obliging an enemy to abandon a position, viz. by attacking and driving him from it; and by manœuvring so as to make it impossible for him to hold it.

The first method should only be adopted when, in consequence of your having a superior force, or of the enemy's position being faulty, it is your object to bring on a decisive engagement.

The mode of applying the second is in general to threaten the enemy's line of communication.

It was by employing the second method after the first had failed that Massena obliged Wellington to retire from the position of Busaco. A peasant informed Massena of a road over the Caramula mountain which he made use of to turn the Duke's left. See (Napier's "Peninsular War") the description of the Duke's detection of Massena's design, which will illustrate more strongly than pages of precept both this maxim and the importance of preserving your line of communication.

Maxim 26. — An attack on the enemy's centre, if successful, is in general the most decisive. That on a flank is the most secure.

In modern military history there are few instances of an army being broken at its centre; the reason of this is the recognition of the disastrous consequences that must ensue to the army so broken. Blenheim and Austerlitz are examples, where Marlborough and Napoleon broke the centre of the hostile lines, separated the two wings, and not only routed but completely disorganised the armies opposed to them. A successful attack against the centre of an enemy's line generally places it in your power to cut off one of the separated portions from its line of retreat; while the attack on a flank is very rarely indeed so important in its results. It may be conceived that if an army have but one line by which it can retire from a field of battle, and that line be in rear of one of its flanks, a vigorous attack on that flank may enable you to seize that line and cut off from it the greater part of the enemy's army. But a general is indeed unworthy of his post if he neglects to strengthen the decisive point in such a manner as to render it safe from direct attack. And if he finds his enemy manœuvre so as to turn that flank and *threaten* his line of retreat, he will retire at once in good order from a position which is no longer tenable.

The centre of a line is not only the strongest naturally, from its position enabling it to be *doubly* reinforced from each wing in half the time required to reinforce one wing from the other, but in addition,

its strength is artificially increased by every possible means; the fire of the guns of a position likewise, all converging on the ground over which the enemy must advance to attack the centre, renders the attack on that point more doubtful than one upon a flank. As a general rule the attack of a position should be made on the weakest points, or on points which are so decisive that an attack upon any other is impossible or dangerous, so long as they remain in the enemy's possession.

The weakest points are the flanks when not supported, or any salient points of the enemy's line which are not well defended by his artillery in position, or any point of his line where he has left an interval, or which he has not occupied in sufficient force.

Of the second class are fortified posts or heights which flank the columns advancing to attack; or any point possessed by the enemy which would enable him to impede your retreating columns in the event of their being repulsed.

Principle 1 indicates that in attacking, all the disposable forces must be brought to bear on the point chosen as the decisive point; and

Principle 2 that a point should not be selected for attack from which the retreat of your columns, if repulsed, can be impeded by the enemy.

It has been before remarked that it is impossible

for a general to combine in any plan the observation of all the rules and maxims of war; he must combine them in the highest degree permitted by actual circumstances; and it follows that in choosing a point of attack, one should be preferred from which the assailants if repulsed may with safety retreat, rather than another which may offer greater temptations to attack, but the line of retreat from which would be exposed.

Maxim 27.—If your enemy is entrenching and it is your intention to attack his position, do not delay a moment. Every hour's delay may cost the loss of 1000 men in an assault.

In Marlborough's brilliant campaign of 1704, actuated by political considerations which were sufficiently urgent to overbear mere military rules, he left several French armies in his rear and was without any base.

It became necessary, therefore, to obtain some immediate *point d'appui* on which to base his operations against the Elector of Bavaria. He selected Donauwerth, with the view of forming his magazines there, and because it would give him a secure passage of the Danube. The heights of Schellenberg command the town and are the key to the place. These were entrenched and guarded by 10,000 infantry and 2000 cavalry. Marlborough and the Margrave of Baden commanded the allied army on alternate days. On

the night of the 1st July they encamped fourteen miles from Donauwerth, and the intervening roads were heavy from long continued rain. The army too was encumbered by a heavy train of artillery. It was Marlborough's turn to command on the 2nd, and he resolved to attack the Schellenberg on that day, notwithstanding the weary march which must be made before it could be done. He knew the entrenchments of the enemy were unfinished and that he was working constantly to strengthen them; and when the difficulty of the undertaking was urged, and the fatigue of the troops in the preliminary march, he replied that *every hour's delay would cost the loss of* 1000 *additional men in the assault.*

He accordingly marched early on the morning of the 2nd; he was not able to attack until four in the afternoon, but the entrenchments were carried and with them he gained possession of Donauwerth.

Maxim 28. — An army on the march and an army in position in an enemy's country, should never be for one moment without its advanced guard and its advanced posts.

The examples of the danger of neglecting this maxim are to be found everywhere.

The Austrians lost the battle of Leuthen because they had no advanced posts to give notice that Frederick was in march along the front of their position with his whole army, to place himself diagonally on

their left flank, his march being only separated from the Austrian position by intervening heights.

Soubise was shamefully defeated at Rosbach, because he carried his army round the left flank of the Prussians to attack their rear, without advanced guards or flankers, which would have warned the main body of Frederick's change of position.

There are two descriptions of advanced posts, viz.: those which are to be maintained against attack to the last; and those which are only to be defended sufficiently long to enable the army they cover to form in order of battle before an enemy can attack it.

The first of these are identical with the tactical decisive points of a field of battle which have been defined.

The second come more particularly under the designation of outposts. The details of outpost duty do not come within the scope of this work; but a few remarks in illustration of its general principles may be useful.

It has been said that the outposts are the watch-dogs of the army, whose duty it is to give timely warning of approaching danger.

The army itself takes up the most favourable position for battle. If that position were on perfectly open commanding ground, from which a sufficiently

extensive view to the front and flank could be obtained to give time to the army, after the first appearance of an enemy, to form in order of battle before it could be attacked, outposts and advanced sentries might be dispensed with so long as daylight lasted; and it would be sufficient before nightfall to push forward the outposts to such a distance as would secure the required object. But such a case can rarely occur. It follows from the above, that all natural features in the neighbourhood of a position which could conceal the approach of an enemy until he should be near enough to do mischief, ought to be occupied by the advanced sentries. Common sense must prescribe the situation of the chain of sentries: it is regulated entirely by the position of the army and the considerations above stated, its distance from the position varying according to the nature of the ground. It cannot depend on the situation of the picquets which furnish the sentries, nor on that of the advanced guards which furnish the picquets, nor on that of the grand guards which support the advanced guards; but, on the contrary, the grand guards, the advanced guards, and the picquets, in a chain of connection, depend on the situation of the cordon of sentries. They are merely intermediate supports judiciously posted to divide the distance between the cordon of sentries and the army; and there may be more or fewer of these supporting or ral-

In case of sur-
tive piquets;
their respective
their resistance
necessary for
ing secured,
es it may not
yance at all,
ged defence
which will
ers to keep
tes, should
the name
l that the
s indivi-
xpedient
ke him-
a con-
uently
oost in
as it
hole
ink

through which the army must retreat if defeated. A retreat through a defile before an enemy is always disastrous.*

It follows, that you should never lose an opportunity of attacking an enemy in retreat while in the act of passing a defile. You in this case apply Principle 1., by allowing any portion of the enemy's army you think proper to enter the defile, and then attacking with your whole force the remaining fraction.

All passes over mountains are of the nature of defiles. When a mountain-range forms the frontier of a state, the valleys by which an army must debouch to invade the state are permanently defended by fortresses, the passes which lead to them generally by forts. The little fort of Bard at the mouth of the pass which leads into the valley of Aosta stopped Napoleon's army in 1800, and would have disconcerted all his plans if he had not succeeded in passing by stratagem. (See as examples the fortresses which close the valleys opening on Piedmont from the Alps.)

A bridge is essentially a defile; and in the same way as important passes are defended by forts, a bridge over a great river is defended by fortifications of more or less strength. A permanent bridge over

* The case of an army defending the head of a bridge is an exception to this, and will be noticed.

a great river is always formed on some great line of communication; such a point has in general been selected as the site of a town, which, on the continent of Europe, is usually fortified. If the town is built on both sides of the river, both the front and rear of the bridge or defile are protected and the town forms a double *tête-de-pont;* if on one side only, then the fortress can only directly defend the bridge from an enemy approaching the river on that side.

Temporary bridges may be constructed by an army at any points on a great river where the means of passage may favour its operations during a particular campaign; they are protected by field-works of more or less strength.

Regarding a bridge as a defile, the passage over it by an enemy advancing to attack you will be best disputed by taking post in rear of the bridge; and if this was all requiring to be considered, this mode would be always followed: but if the *possession* of the bridge is necessary to the army, it must be protected from injury, otherwise the passage of the enemy would be best prevented by blowing it up or dismantling it (which measure would always be adopted by a retreating army to stop pursuit). The field-works therefore which protect the bridge (commonly called the *tête-de-pont*) should be so situated in front as to cover it from the enemy's guns, and should be of such a nature as to afford the de-

fending army a very strong position for battle in front of the bridge, and a secure protection during its retreat across the bridge if defeated. Sometimes, and it is a great advantage, field-works are constructed in rear as well as in front, to afford the retreating army a rallying position, in which it may almost certainly defeat all attempts of the enemy to follow. And in some cases the *tête-de-pont* is double, that is, works are constructed to defend an approach to the bridge from either side. This would be of immense importance to an army whose line of operation was parallel to the course of a great river and its flank supported thereon, as it would enable the army to change the bank of operation at will, and to prevent the enemy from following.

Examples of Maxim 29.

1. *Siege of Mantua by Napoleon.*

Mantua is almost surrounded by three lakes, formed by an enlargement of the river Mincio. In 1796 it communicated with the mainland by means of five causeways, varying from 400 to 200 yards in length. Although these causeways, being swept by artillery, would have rendered an assault of the town almost an impossibility, they evidently afforded a blockading force all the advantage which can arise from a position taken up in rear of a defile. Each causeway being a defile of great length, a very small

force posted at its extremity was able to prevent the egress of a superior force. Accordingly, with 8000 men, Serrurier blockaded the Austrian garrison consisting of 14,000 effective men, and paralysed their action during the campaign. And in the same year, after Wurmser took refuge in Mantua, the Austrian army which was there blockaded amounted to 25,000.

2. At the *battle of Meeanee* the British troops under Sir Charles Napier advanced to the attack by echellon of regiments from the right.

The right of the line, as it neared the enemy, skirted the high wall of an extensive shikargah (a hunting-ground or forest of the Ameers), which protected the Ameers' left flank, and in which 6000 of their matchlock-men were posted to take the British line in flank and rear when it should close with the Belooch line of battle. The wall of this shikargah had one opening in it, not very wide, about 300 yards in front of the Belooch left.

"The general rode near this wall and found it was nine or ten feet high; he rode nearer, and remarked that it had no loopholes for the enemy to shoot through; he rode into the opening under a play of matchlocks, and, looking behind the wall, saw there was no scaffolding to enable the Beloochs to fire over the top. Then the inspiration of genius came to the aid of heroism. Taking the grenadiers of the 22nd,

he thrust them at once into the opening, telling their brave captain, Tew, that he was to block up that entrance; to die there if it must be, never to give way! And well did the gallant fellow obey his orders; he died there, but the opening was defended. The great disparity of numbers was thus abated, and the action of six thousand men paralysed by the more skilful action of only eighty! It was on a smaller scale as to numbers, a stroke of generalship like that which won Blenheim for the Duke of Marlborough." *

In this example the opening in the wall was the defile, by taking post behind which eighty men held in check 6000! Sir C. Napier made use of the defile to apply Maxim 19.

Maxim 20.—Every disadvantage may be removed by skill or fortune, except *Time*. If a general has Time against him he must fail. And conversely, *Time* is the best ally.

* Napier's "Conquest of Scinde."

CHAP. V.

LINES OF DEFENCE.

LINES of defence are natural and artificial.

Of the first are deserts, mountain-ranges, great rivers, and dense forests.

In general, the frontier line which divides one country from another is formed by some one of the above-named obstacles, or a combination of them.

That which presents the greatest difficulty to an invading army is a desert, on account of the immense transport which must accompany it to carry water and provisions, because of the few tracks by which it can be passed (which are determined by the position of the wells), and moreover because of the opposition to be encountered from the elements in those regions where deserts are found. As an example of the difficulties of such an operation in our own times and by our own troops, and of genius in surmounting them, see the account of Sir Charles Napier's eight days' march across the desert of Scinde for the purpose of destroying the Ameer's fortress of Emaum Ghur.*

* "Conquest of Scinde," 1st chapter, 2nd part.

Next in order come mountain-ranges; these can only be passed at certain known points, which can be watched by the defenders. The outlet of the passes which an invading army must traverse, may be occupied by small forts, and the valleys into which the passes admit, by fortresses.

Although a range of mountains is unquestionably a great obstacle, it is rarely an insurmountable one, unless defended by the mountaineers themselves, who know every path and track; where these are neutral, the best positions may, in general, be turned by paths unknown to the defenders. As an example of this may be cited an extract from the report of the Duke de Rohan, who was defending the Valteline against the Spanish and Austrian armies. In describing the position of his army he states, "In the present instance, although the flanks of the army were thought to be securely protected by the mountains as by so many fortresses, it was found to be exposed on all sides, and one opening was no sooner closed than two more were discovered; so that several armies in place of one would be required to defend this country." It was a maxim of Napoleon's that "where one man can set his foot a whole army may pass."

The defence of any long line, however strong it may be generally, over which there are many practicable passages, is difficult in proportion to the

number of those passages. An invader, by threatening to advance on several of these points, may oblige the defenders to disseminate their forces and to guard each equally, while the mass of the invading army advances on that which has been originally selected.*

Dense forests are much on a par with mountains, or they may probably be more easily defended, since all the passages through them are known with greater certainty.

From what has been said, it is evident that the line of a great river is less easy of defence than a range of mountains, as affording a far greater number of points of passage.

It must be remarked, that lines of great natural obstacles are only "lines of defence" when they run across the line of operations of an aggressive force. When they run parallel to such line of operation they are, on the contrary, a great advantage to that force. Its flanks are supported on them; it may divide the enemy's attention and forces, by threatening to operate on both sides. In this case the passages over such obstacles are of great military importance, as affording the army the power of changing the side of operation at will. Here the advantage is generally

* It was in this manner that King Joseph passed the Sierra Morena after Ocana, when he invaded Andalusia.

with an invading army; for the object of the defensive force being to bar the progress of the enemy in a certain direction, it cannot change its side of operation without leaving open to the enemy the road by which he was advancing towards his object, unless such a change of side should enable the defenders to act offensively against the communications of the invading army.

The passes then by which mountain-ranges, and the bridges by which rivers, are crossed, whether those ranges and rivers cross the line of operations of an army or are parallel to it, are decisive strategical points of a high order.

Of course that army which is in possession of those passes or those permanent bridges which are defended by fortresses, has the advantage; but as regards rivers, an army which is provided with proper bridge trains possesses the power of passage at every point where it is not disputed by an enemy, at the expense of the delay necessary for the construction of the bridges.

Ulm, in the campaign of 1800, was a double *tête-de-pont*, affording the Austrian marshal, Kray, a passage over the Danube from either bank, which river was parallel to the line of operations of the French and Austrian armies; and the manner in which Kray employed the possession of that point to hold Moreau in check illustrates this subject well.

On the Passage of Rivers.

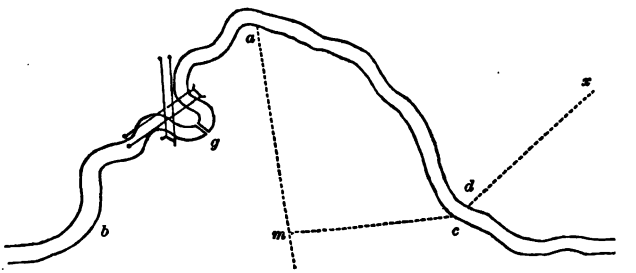
The passage of a river in presence of an enemy is a great military operation. It may be effected either by main force or by stratagem.

In general, the passage of a great river which is defended by an enemy is effected by stratagem, by deceiving the enemy as to the intended point of passage. The *neighbourhood of the spot* is determined by the line of operations, which has been chosen in accordance with the principles of war, as being that which is calculated to inflict the greatest amount of injury on the enemy; the *spot itself* is determined by local peculiarities, which will be referred to hereafter.

Principle 2. will be best applied by selecting as the neighbourhood of the spot where the passage is to be effected a part of the river where its general course is salient with respect to the position of the army about to cross (or concave towards that army), as that configuration affords a salient angular base of manœuvres, from the sides of which it may, after crossing, act against the enemy's communications.

In the diagram, an army operating from the side *b*, *a*, *c*, can evidently apply Principle 2. at the expense of an enemy whose general force is distributed along the opposite bank, by crossing at some point between

a and *b*, or between *a* and *c*: the nearer to *a*, the more complete is evidently the application.



Among the local peculiarities which will be described as determining the *spot itself*, it must here be remarked, to prevent confusion, that one of the most important is the existence, at the place where the bridge is constructed, of a bend or loop which is re-entering (or convex) towards the army about to cross. The position of a bridge is shown at *g* in the last diagram at such a re-entering loop in the part *b*, *a*, *c*, of the river whose general course is salient with respect to the army.

A skilful commander will not endeavour to prevent the passage of a river by guarding every practicable point of passage. To do this would be to expose the fractions of his force to successive defeat by the mass of the attacking army, should it succeed, as is most probable, in effecting a passage somewhere. In such

a case the assailants should select some point near the centre of the enemy's extended front for a passage with the mass of their army, and turn against one of the separated portions after crossing, while the detachments of that portion are kept in their isolated positions by demonstrations made on the opposite bank by small parties of the attacking force.

The general of a defensive army will do better to keep his troops well in hand in a central position, making use of his light troops to observe the intentions of the enemy, and, should he succeed in penetrating them, to come down upon the enemy suddenly while in the act of forming his bridge, or better still after a part of his force has crossed; or, if not, the commander of the defensive force should name a point of concentration in rear of his line on the enemy's line of advance, where his army, in a strong position, may successfully dispute the farther advance of the enemy, and defeat him with the river in his rear.

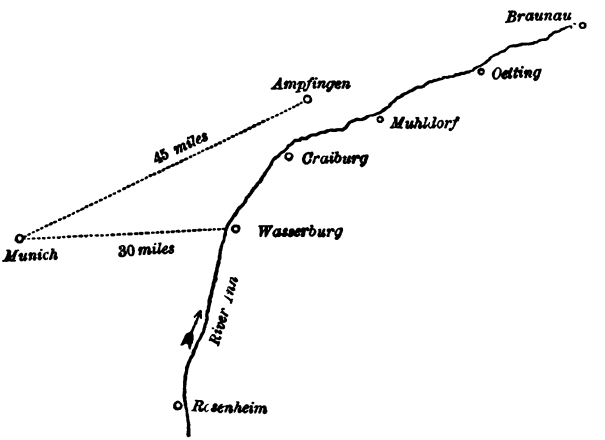
But perhaps the most effectual way of forbidding the passage is to take up such a position on the line of the river as will enable the defenders to assume the offensive by acting against the communications of the enemy. In the last diagram, a defensive army posted at *d*, which possesses the means of passage at that point, and can retreat in the direction *d x*, will prevent the passage of an assailant at *a*, whose line of

operation is *m a*, because the army at *d* can act against that line without exposing its own. In this case, if the bridge at *d* were permanent it would be protected by a strong *tête-de-pont* consisting either of a fortress or field-works.

When an enemy is posted behind a considerable river and is in possession of *têtes-de-pont* at several different places along its course, you should never approach the river with your different divisions simultaneously along an extended front. To act thus would be to forget the enemy's power of taking the offensive, and to expose your fractions to be beaten in detail by the mass of the enemy's army, which, supposing it to have passed the river, would have several secure points on which to retreat, viz. the different *têtes-de-pont.* In such a case approach the river in echellon, so that the only part of your army which the enemy can attack without exposing his own flank is the head of the echellon. Your object is to deceive the enemy as to the intended point of passage. Having determined on some point which should be at a distance from the head of the echellon to puzzle the enemy, and having made a demonstration with your light troops at different places along the river-front to divide his attention, direct your columns as rapidly as possible on that point and throw your bridge across.

Moreau's advance on the Inn in 1800, before the

battle of Hohenlinden, illustrates the above by its errors. He approached that river with six divisions



simultaneously, which were distributed over a line of forty-five miles, between Muhldorf and Rosenheim. His opponent, the Archduke John, had on that river five strong *têtes-de-pont*, viz.: Wasserburg, Craiburg, Muhldorf, Oetting, and Braunau. One of Moreau's corps was at Ampfingen under Grenier, and consisted of 25,000 men. The archduke, who had crossed at Oetting with his main force, attacked Ampfingen in front with 60,000, while another column of 20,000 crossed at Craiburg and placed itself on the right flank and rear of Grenier.

Moreau's dispositions were very defective; Munich was his pivot of operation; yet he divided his force along the line between Ampfingen and Rosenheim,

while his enemy possessed the bridges of Craiburg and Wasserburg, either of which gave the archduke the power of acting on the flank of the French corps on the river above those places, and on the rear of the corps below them. Wasserburg also is nearer to Munich than Ampfingen by fifteen miles. All the Principles were in favour of the archduke. No. 1., because he could bring the mass of his army in contact with fractions of his enemy. No. 2., because he could act on the communications of the enemy without exposing his own. No. 3., because he had all the advantage of interior lines.

The only circumstances in which the passage by force is justifiable in presence of an enemy of equal strength, are—

1st. When the river is of such a breadth only as permits your artillery to range, not only to the opposite bank, but far beyond it.

2nd. When the banks on the side from which your army passes have a decided command over the opposite bank.

Where the above conditions are observed, the passage is a small affair, for your guns not only protect the passage, but can also keep the enemy at a distance from the opposite bank, unless he has natural or artificial cover. The river is in such a case like the ditch of a fortress which protects its artillery. The troops pass in safety and form upon the opposite

bank under cover of their guns. It is true that the troops which have crossed are nearer to the enemy's artillery than are the guns which protect them; but where the river is small, the difference of distance which is in favour of the defenders may be more than compensated by the difference in the height of the banks which is in favour of the assailants. You can also trust something to courage; it is attacking a position of strength, nothing more.

In the case where a river is so broad that your guns cannot do much more than range across, the difficulty is much increased; for the defenders, being so much further removed from the guns which fire upon them, can now approach their artillery quite close to their own bank. The troops are not only exposed to a terrible fire while crossing, but their formation on the further bank is prevented by the same.

In this case the advantage of artillery rests altogether with the defenders; and under these circumstances a spot must be sought where the nature of the course of the river will supply to the assailants that preponderance of fire which is indispensable to effect a passage.

Such a spot is found at any bend or loop of the river's course which is re-entering with respect to the army about to cross, or concave towards the side of the enemy. This formation enables batteries to be

placed so as to cross their fire in front of the bridge. The more decided the loop the greater the advantage in this respect, as the greater will be the area of ground on the other side of the river protected by the fire of the assailants, the greater the fire as more guns can be posted, and the greater the distance at which the batteries of the defenders must be placed.

Where there is no bend an island will supply the want, under whose cover several bridges may be thrown over to the island and artillery passed over. An island covers the preparations of the assailants from view of the enemy, and restores the advantage of artillery when the breadth between the island and the enemy's bank is small. *Example,*—the island of Lobau, made use of by Napoleon for the passage of the Danube in 1809. Napoleon employed a month in preparing for his passage, by constructing bridges to the island of Lobau, and forming powerful batteries on several small islands, the fire from which would protect his bridge-head.

An affluent on the side from which you are operating is a great advantage in enabling you to conceal all your preparations and the assembly of your boats from the enemy's observation.

Where a river has not a greater breadth than 500 yards, and the ground on the side of the assailants commands the opposite bank very decidedly, the

enemy cannot prevent the construction of the bridge notwithstanding that there may be no bend or island. A skilful general who wishes to oppose the passage will content himself with disposing his army in a semicircle round the bridge-head, sheltering it by trenches from the fire of the enemy's guns as close to the bridge as the distance of those guns will admit, and bringing a converging fire to bear on the head of the bridge, which is essentially a defile.

Such a disposition should cause the failure of all attempts to force a passage. It was thus that Vendôme prevented Eugene from making use of his bridge at Cassano.

Napoleon succeeded in forcing the passage of the Adda at Lodi, because, although the Austrian artillery swept the bridge itself, no guns were placed to batter the French columns as they debouched from the bridge.

Before concluding this subject, one point of great importance must be alluded to, viz., the effect which the climate, as well as the physical features of the country in which you are operating, exercise on the depth and force of water in the rivers you may have to cross. During the battle of Essling a sudden rise of twenty-eight feet in the waters of the Danube carried away the pile bridges which connected the island of Lobau with the right bank, and which were

Napoleon's only means of retreat. His position however in the island of Lobau was very strong.*

Of Artificial Lines of Defence.

These consist of fortifications of different degrees of permanency according to circumstances.

The northern frontier of France, for example, not being formed by any line of natural obstacles, is protected by a triple line of fortresses. These fortresses cannot prevent an enemy from penetrating between them, but they afford strong support to a defensive army in opposing the progress of an invader. They also give time to the defenders to strengthen themselves, by compelling the enemy to besiege such of them as are near enough to endanger his communications; or if the enemy advances before capturing such places, they weaken him by the amount of force which he must leave behind to blockade them in order to prevent their garrisons from cutting off his supplies. They also enable a general to pass with a small force the columns of an invading enemy, and, pushing for the fortresses, to collect their garrisons and form a large army on his rear. Napoleon meant to do this on the Elbe, and afterwards in defence of Paris.

* The materials of this chapter are derived from the opinions of Frederick, the Archduke Charles, and principally of Napoleon.

Lines of field-works, commonly called lines of entrenchment, are of two kinds; *continuous* and *broken.*

Continuous lines, as the name implies, are formed of a continuous trench covered by a parapet.

Broken lines consist of a series of independent works, so disposed as not only to defend the approach to each, but also to afford each other a mutual support.

In the time of Louis the Fourteenth Continuous lines were in great favour with the French generals; entire districts were converted into entrenched camps covered by natural obstacles where these existed, such as rivers, marshes, and forests, sometimes in addition to the entrenchments, sometimes forming a line of defence of themselves. And those points of the line which were not protected by such natural obstacles were provided with Continuous lines. This mode of fortifying a line of frontier has fallen into disuse. The expense and labour were very great, and they were never effectual to arrest an attacking force. In the same way as all the practical passages of a river cannot be guarded, so a line of entrenchments cannot be guarded at all points. The assailant has the advantage, and will rarely fail either to cross at some unguarded point or to turn the lines, in which case they become useless.

For the purpose of defending a district of country,

Broken lines are far more advantageous. These, consisting in general of strong detached redoubts armed with artillery, afford protection to an inferior force against one which is superior, and a more favourable field of operations for maintaining itself against attack.

The redoubts would be like so many bastions in a fortification whose fire would afford a mutual defence, as well as sweep the space over which an enemy must pass to attack the troops posted between them, who may be considered as holding the place of the "Curtain."

It is a great mistake to suppose that the position of good troops is improved by shutting them up behind a parapet. The soul of a defence consists in the power of taking a vigorous offensive whenever a favourable opportunity presents itself. That occasion would arise when the advancing enemy is confused and discouraged by the fire of the artillery in the redoubts. But the effect of a charge depends on its being executed at the proper moment with rapidity and concert; and these would be much impaired if the troops were obliged to mount over a parapet before they could advance.

Either the point at which the enemy will endeavour to penetrate is known, or it is not.

If known, his progress would be opposed by the defensive army united, whose position for giving

battle would be decidedly stronger where its front and flanks were covered by a few strong works containing artillery, and where its movements were free between those works, than where it would be hampered by being shut up behind a continuous parapet, which, once broken through, would be useless.

In the second case, where the attacking army surprises a passage, there would be no troops to oppose it, and the continuous line of parapet would be no obstacle.

The most famous lines of modern days are those of Torres Vedras. These were constructed by the Duke of Wellington, to form a safe base on which to retreat before the superior numbers of the French, and to cover Lisbon. They consisted of two lines of detached works, extending from the Tagus on the right to the sea on the left. Parts of the line towards the centre were upwards of eight miles asunder, but on the right flank they approached each other closely. The inner line, which was the strongest, extended twenty-four miles from Alhandra on the Tagus, about fifteen miles from Lisbon, to the mouth of the San Lorenzo river, twenty-five miles from Lisbon. The outer line extended likewise from the sea to the Tagus, passing near the village of Torres Vedras, and covered nearly thirty miles.

The occupation of such an extended front by

Wellington's army, only 50,000 men, would have been highly dangerous and contrary to the rules of war, but for the fact that the communications between the two lines, and between all parts of each line, were perfectly organised; and from the nature of the country in their front, Wellington possessed greatly the advantage of interior lines, which would enable him to concentrate on any given point in a much shorter time than would have been required by his opponent. His position in this respect had doubly in its favour Maxim 15., since the communication between the parts of his line was good, while between the parts of his opponent's line it was difficult.

A chain of telegraphs, too, transmitted information or orders from one end of the line to the other, in the space of seven minutes. The position of Wellington at Torres Vedras united in its favour Principle 3., and Maxims 10. 12. 13. 15. 17.

Lines of entrenchment are analogous to lines of natural obstacles, and are subject to the same general rules. The operation of surprising a passage through them is precisely similar to that which has been described respecting a river.

The above remarks upon lines of entrenchment apply equally to all works on a contracted scale which may be employed to strengthen any position. The two famous sieges of the late war, Sebastopol

and Kars, afford examples of continuous and broken lines. The position of the besiegers at Sebastopol and the besieged at Kars was in both cases that of an entrenched camp. At Sebastopol, a continuous trench and parapet extended from the heights overlooking the sea above Balaklava on the right to Inkermann on the left. At Kars, the defences consisted of short detached lines of parapet, strengthened by a few strong enclosed works, which were judiciously placed on the different heights which surround the town. It is worthy of remark that the Russians in their assault of the 29th September turned all these lines of parapet at different points; but the defenders retired within the shelter of the redoubts until reinforcements could arrive. Without those redoubts, the Russians would have succeeded.

The lines constructed by the besiegers at Sebastopol to protect the allied armies from the attempts of the Russian army in the field, were "Lines of Circumvallation."

In former days these were always employed by the besiegers to protect their army during the siege operations, but they have fallen into disuse, and are not recommended by modern military writers. In some cases they are indispensable, and the siege of Sebastopol was one of them; and we have the decided opinion of the great Napoleon, as well as the general principles of war and common sense, in

testimony of their being never injurious, and always advantageous when a besieging force is exposed to attack from an enemy of nearly equal strength.

Bousmard, who was the engineer of Frederick the Great, says that such lines when ill constructed are useless and dangerous, and that an army of observation is necessary in addition to protect the siege; but that, when well constructed, they can effectually protect a besieging force and dispense with an army of observation. If however it be a question between the two, the army of observation is of infinitely greater value to a besieging force than lines of circumvallation; since without the first, the enemy becomes the undisputed master of the theatre of war and can intercept all the convoys of the besiegers, which must of itself prove fatal to the success of their designs unless they are actually furnished within their lines with the necessary provisions and supplies of all sorts sufficient for the duration of the siege; a very unlikely case. But where both exist, the army of observation can manœuvre at a distance from the siege for the protection of the convoys, &c., and if pressed, can fall back to the shelter of the lines, which will afford it a strong position in which to defeat all attempts of the enemy to interrupt the siege.

Examples of the truth of the preceding opinions are afforded by —

The siege of Arras, in 1654, where lines of circumvallation enabled the Archduke John to carry on the siege for thirty-eight days, in spite of Turenne's efforts to interrupt it.

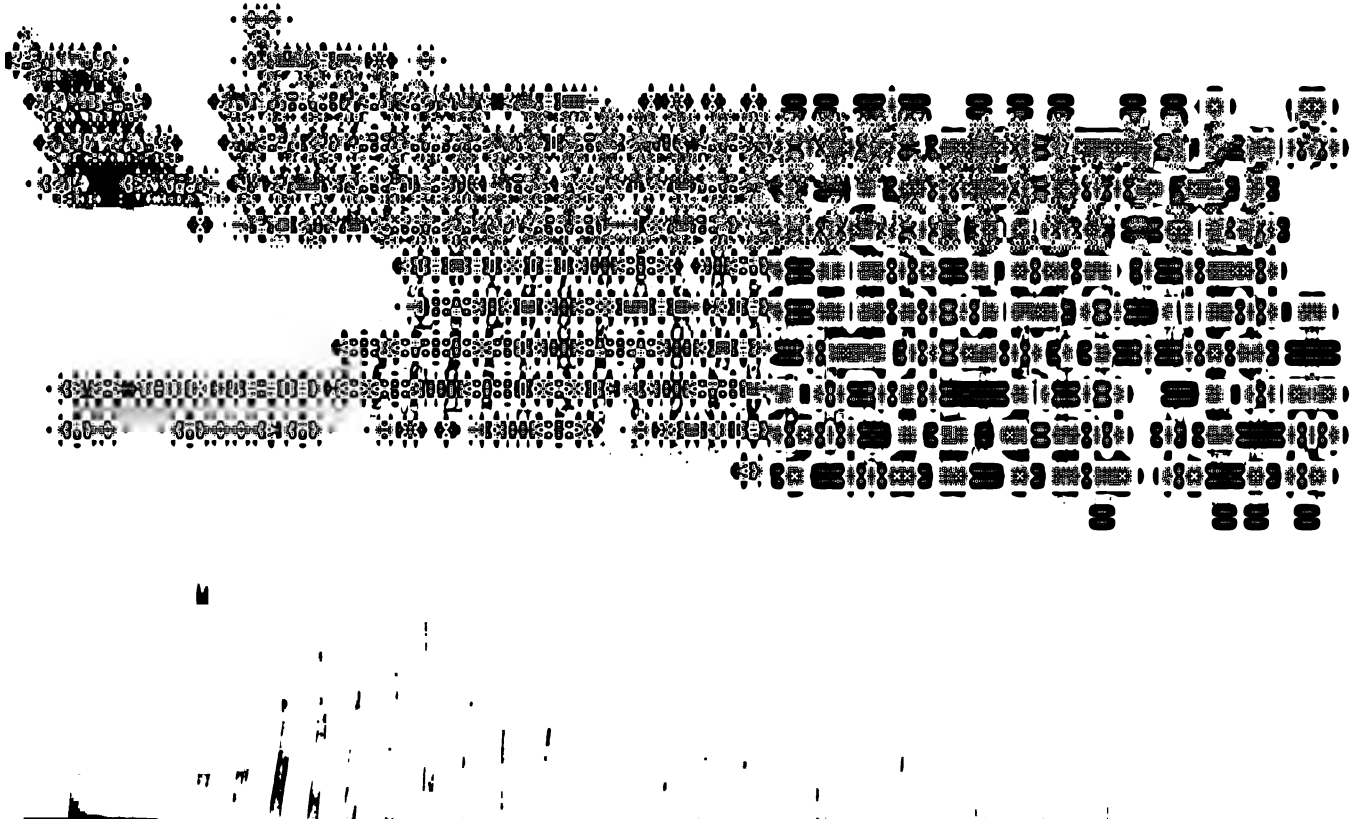
The siege of Laudrecy in 1712, where lines protected the besiegers under Prince Eugene from the attempts of Villars, who was obliged to resort to a circuitous method of relieving the place.

The siege of Lille by Marlborough and Eugene, in 1708, where the lines completely baffled the Dukes of Burgundy and Berwick. Marlborough manœuvred at a distance from the siege with an army of observation, kept open his communications, and protected his convoys; and on the approach of the enemy towards the place, he withdrew to the shelter of the lines of circumvallation, which afforded too strong a position to be attacked by the French marshals, notwithstanding the peremptory orders of Louis the Fourteenth that they should risk an engagement for the relief of the place.

The siege of Mantua in 1797 by the French. When Provera appeared before Mantua, with the design of raising the siege and liberating the army of Wurmser, which was blockaded therein by an inferior force, he was held in check by the lines of St. George, until Napoleon arrived from Rivoli and forced him to capitulate.

Lines of circumvallation are subject to the same

rules as lines of entrenchment in general. We must therefore conclude that to have made them continuous at Sebastopol was a mistake. It is conceivable that a belief in the great superiority of the Russian cavalry (which if it existed was effectually dispelled by the battle of Balaklava) might have led to the formation of a continuous barrier which could arrest its progress over the only ground where it was possible for that arm to attack the allied position with any prospect of success, especially where success would have cut off the English army from Balaklava, its base; but the same reasoning does not apply to the crest of the heights along which extended the rest of the allied position; and indeed the remarks on the great superiority of detached over continuous lines are equally applicable to both of these cases. Our own cavalry would have been much hampered both in advancing and retreating, by the continuous parapet. It must be remembered that the redoubts, for abandoning which the Turks were so unjustly blamed, were unfinished and unsupported.



whatever knowledge, wit, courage, and other qualities they may possess, nature has not called them to the command of armies and the direction of great military operations."

In every battle there is a decisive point and a decisive moment (which once let slip, never returns) on which and at which every disposable horse, man, and gun, must be brought into action. The qualities referred to in the above quotation are manifested in the highest degree by the faculty of correctly appreciating that point and time. The commander who, dazzled by false impressions of the importance of passing events, anticipates the decisive moment and engages his reserves too soon, is lost.

Great commanders have all possessed in a high degree the qualities above enumerated. A remarkable exception as regards the power of attaching his soldiers, is afforded by one of England's greatest and most fortunate generals, who never did acquire the love of his troops, although he possessed their unbounded confidence.

Great generals have always shared Napoleon's opinion on the value of moral agents in war, and have liberally employed them as enumerated under the succeeding items.

No. 2. *Stratagems.*—The success of a stratagem depends mainly on the commander's knowledge of human nature in general and of his opponent's

character in particular. Its object is to deceive your enemy as to your designs. If you desire a general action, spread reports of the weakness of your army and appear to avoid one. If the contrary, put on a bold face and appear desirous to engage. The employment of stratagem is particularly applicable to operations having for their object the forcing of any long line which it is impossible for an enemy to guard at all points, such as mountain-ranges, rivers, entrenched lines, &c.

No. 3. — *The elation or depression of the soldiers* arising from any cause whatever, whether from former defeats or victories, from confidence or the reverse in their commander, from the health or sickness of the troops, &c.

No. 4. — Everything connected with *information* and the *means of obtaining it.* — It was one of Napoleon's maxims that "when a general is operating, not in a desert but in a peopled country, if he is not well supplied with information, it is because he is ignorant of his trade."

Without accurate intelligence of an enemy's movements the greatest military talent is useless. The faculty of organising a system of intelligence is a prominent quality of a great commander, and one demanding a deep knowledge of human nature.

Examples.

No. 2. *Stratagems. — Napoleon's Army of Reserve in* 1800.

In January the consuls decreed the formation of an army of reserve. An appeal was made to all discharged soldiers to serve their country under the command of the First Consul. Napoleon's plan was to employ it in succouring the army of Italy, which was hard pressed, by crossing the Great St. Bernard, and in operating on the rear of the Austrian army. For the execution of this plan the most profound secresy, celerity, and boldness were required.

The problem was how to conceal from the numerous spies of England and Austria the assembly and movement of such an army. Napoleon judged that the best way to effect his object was himself to divulge its existence with such ostentation as should excite the ridicule of his enemies when collated with apparent facts; so that they might be led to consider the pompous announcement of its strength as merely an attempt to create a diversion in favour of Massena, who was blockaded and starving in Genoa. In order to direct the attention of the spies to a definite point, Dijon was named as the rendezvous of the army. All the spies flocked to that place and witnessed the pompous review of about 8000 half-armed and badly clothed conscripts by Napoleon in person,

in the beginning of May. All Europe immediately rung with ridicule of "Bonaparte's army of reserve." At the same time that the formation of this army was published with the greatest ostentation, Napoleon caused numerous handbills to be printed, in which, interspersed with many scandalous anecdotes of the First Consul and his court, pretended proofs were given of the impossibility of the existence of "the Army of Reserve." Meanwhile the divisions of the real army of reserve, which numbered 36,000 men and 40 guns, had been secretly assembled at different points along his intended route. It was principally composed of old soldiers drawn from La Vendée, which the conciliatory measures of Napoleon had pacified. Its advanced guard was reviewed by him at Lausanne on the 13th of May, and it was in full march on Italy at the very moment when the Austrians before Genoa were saying, that the French counted too much on their gullibility in hoping to induce them to raise the siege of Genoa by the fear of being attacked by an army of 8000 invalids and conscripts. The result is well known; the army of reserve descended like a thunderbolt on the plains of Italy, and the campaign of Marengo was its brilliant achievement.

Passage of the Po at Placentia, 1796.

After the battle of Montenotte one of the conditions of the armistice signed at Cherasco with the King of

Sardinia was the delivery to the French of Valentia on the Po. Napoleon sedulously fostered the belief that he intended to pass the river at that place, and that it was with this view its surrender had been stipulated. The Austrians, acquainted with the articles of the armistice, were deceived into the general belief, in which they were confirmed by the manœuvres of Napoleon, which were all directed to that end. Having drawn the whole attention of his enemy to Valentia by these means, he suddenly directed the divisions of his army by forced marches on Placentia, where, that place being unguarded, he passed the river without opposition.

Examples are elsewhere given of Marlborough's passage of the lines of the Mehaigne, and of those constructed by Villars in 1711, which are worthy of attentive study.

Among the ancients, the stratagem of the oxen employed by the greatest general of antiquity is familiar to every school-boy.

Examples to No. 3. — It was Napoleon's system to deceive not only the world at large, but also his own soldiers as to the strength of his armies. Levies of men were decreed by the "Moniteur" which were seldom more than partially raised. In Egypt the real quantities of provisions and clothing issued to the troops were always increased in general orders by one

third, to give his soldiers confidence in their supposed numbers. In the early campaigns of Italy the same practice prevailed.

It is well known that he employed the Press of Paris to publish those accounts only of his military operations which he desired his armies as well as the French public to believe. He neglected no artifice which could raise the spirit of his soldiers, and never failed to avail himself of the enthusiasm and confidence with which his victories inspired them to inflict further disasters on his opponents while dispirited by defeat.

His maxim was that a general should anxiously consider at the commencement of a campaign whether he should act on the offensive or not; but that, having decided for the offensive and commenced accordingly, he should sustain it to the last extremity, on account of the great loss to the honour of his arms and to the *morale* of his army which would be occasioned by a retreat.

He says: "The worst plan to adopt in war is almost always that which is the most pusillanimous, or commonly called prudent;" and that "true wisdom in a general consists in an energetic resolution."

Several examples of the great moral effect of a bold course in averting disaster are drawn from the campaigns of Turenne; one is given here, having a

direct reference to this subject; the rest illustrate equally other general rules, and will be found elsewhere.

In 1653, Turenne commanded the French army of 16,000 men, of which 10,000 were cavalry. A Spanish army of 30,000 men, under the Archduke and Condé, invaded Picardy, and threatened to march on Paris, where there was great consternation. Opinions were divided as to the best course to pursue. Some proposed to employ 5000 of the infantry to garrison the places which were on the Archduke's line of operations on Paris, and with the remainder to harass the enemy's line of march, to cut off his stragglers, intercept his convoys, &c.

Others rejected the idea of dividing the army, and proposed that it should take post behind the Oise to defend the passage of that river; and when forced, that it should fall back on Paris where it could be joined by the succours which delay would bring from the provinces.

Turenne favoured neither scheme. It was impossible to prevent the passage of such a river as the Oise; yet, when the enemy should succeed in forcing it, he as well as the Parisians would magnify the success, and its influence on the *morale* of the army would be most depressing.

The plan which he adopted was to march always in a parallel line with the enemy at the distance of

twelve or fourteen miles; to wage a warfare of marches and manœuvres. His soldiers would thus have no reason to believe themselves inferior to the enemy, and time would bring reinforcements which might enable him to assume the offensive. The conception was on the whole skilfully executed.

On the 13th of August, however, the army of Turenne was surprised when near Mont St. Quentin by the intelligence of the approach of the Spanish army.

The alarm was great; Turenne drew up his force in order of battle; but his left was so badly posted, being commanded on all sides by heights which the superiority of the enemy would enable him to occupy, that to remain in his position was certain defeat. Meanwhile the enemy was approaching. The country which separated the hostile armies being mountainous, Turenne resolved — instead of retreating as an ordinary general might have done — to advance, in the certainty of finding a better position than that which he was about to quit. Accordingly he had not marched more than two miles and a half when he found what he sought. His left rested on an almost inaccessible height, and his front was covered by a stream which flows into the Somme at Peronne. At three in the afternoon the Spanish army presented itself. Condé wished to attack Turenne at once; but the Archduke said his troops

were fatigued and they must first have a night's rest. The French profited by the delay to entrench themselves; and next day the Spanish generals thought their position too strong. After remaining before it three days the Spanish army decamped.

Observations. — In this campaign Turenne's plan was doubtless attended with great risk, but it was only a choice of evils, and any other would have sooner enabled the enemy to march on Paris. Turenne was well aware also that the Archduke was not a very enthusiastic ally of Condé, and that he would not risk his army where success did not seem certain. The Archduke's policy was to foment the civil troubles of France, and to take a few fortresses which would strengthen his own Flemish frontier. Condé's object was to march on Paris at all hazards, to revive the party of the Fronde, and to assist the revolt of Bordeaux. Turenne's scheme was framed on the sagacious consideration of these moral circumstances. Again, if he had retreated from Mont St. Quentin behind the Somme, the enemy would have followed, and Turenne must either have risked a battle elsewhere to arrest his march, or have left open to him the road to Paris. In either case, his retreat would have exercised a depressing influence on the French, and a proportional encouragement on the Spaniards. But his occupation of so bad a position at Mont St. Quentin, and his allowing

himself to be surprised by the enemy, are not to be excused.

Sir C. Napier understood as well as any commander, and practised with as much skill, the means of raising the spirit of his soldiers. He removed existing causes of depression, and acquired their unlimited confidence by the calm justice and sagacity of his sway, as well as by the fiery energy with which he undertook and accomplished the apparently most hopeless enterprises, thereby creating a belief in his invincibility both among friends and foes. The last complimented him with the title of the "Devil's Brother." No commander ever possessed or deserved in a higher degree the love of his troops.

Examples. — On his first arrival in India he found the existence amongst the officers and men of a most pernicious belief in the superiority of the Afghan matchlock over the British musket, both as regards range and precision. Aware how depressing would be the effect of such a belief in the event of hostilities, if allowed to continue, "he resolved to refute it practically; and, to draw attention to the refutation, he adopted an ingenious device.

"Provoking a warm admirer of the matchlock to produce a Mahratta equal with that weapon to a musketeer, he meanwhile selected some men and

officers of the sepoys, practised with them himself, until he discovered the best shot, and then daily contended in person with this man. They were nearly equal; the camp became interested; bets were multiplied; and the partisans of each weapon were fairly pitted against each other, not only for the trial, but in the thoughts of the soldiers: this was the general's object. Thus he bent the stiffened neck of the prejudice, and at the end of two months the supporter of the matchlock admitted that he could not win; moreover it was proved that while the matchlock could only be fired five or six times in half an hour, the musketeer could fire sixty shots, and send twenty home to the mark at 150 yards' distance. Then, to use the General's words, the matchlock was laughed at, and the musket got its place again.." *

Sir C. Napier's march through the desert to Emaum Ghur, of which the great Duke of Wellington said, "It is one of the most curious military feats which I have ever known to be performed, or ever read of in my life;" and his extraordinary campaign (completely successful) against the robber tribes of the hills, are instances of his self-reliant daring. The last achievement challenges favourable comparison with any military operation on record.

He acquired the love of his troops by showing

* Napier's "Conquest of Scinde."

that he loved them; that he never spared himself either the dangers, fatigues, or privations to which the meanest of his soldiers was exposed. Verily he was a model general; those who knew him will add, he was also a model man!

Napoleon has said that Turenne is the only general on record whose daring increased with years and experience. Had he written thirty years later, he might well have excepted the conqueror of Scinde, who was a more remarkable instance; he having been upwards of sixty when he won his first battle.

King Joseph neglected the moral means at his command, in permitting Wellington to continue to drive him along the route to Vittoria in 1813, instead of arresting his retreat to give battle, at the moment when the enthusiasm of his army was excited by the intelligence of Napoleon's great victory at Bautzen. But besides this inducement to a bold course, another existed in the fact that on the army of no other nation does retreat exercise so dispiriting an influence as on the French. In speaking of this retreat Napier says, "He (Wellington) had judged the king's military capacity; he had seen the haste, the confusion, the trouble of the enemy, and knowing well the moral power of rapidity and boldness in such circumstances, had acted daringly indeed, but wisely, for such daring is admirable, it is the highest part of war."

If the Great Duke of Wellington is not further alluded to, it is because his character and fame are as household words. Men want no candle to show them the brightness of the sun. He was the master from whose school went forth such pupils as the two brothers, of whom one was the conqueror of Scinde; in the other, Wellington was so fortunate as to find a historian of genius akin to his own, and able worthily to record his great deeds.

Much moral force lies in "the initiative" in war. The power of taking the initiative in a campaign and of obliging an adversary to follow it, is one of the principle indications of military genius in a commander.

In the campaign of 1675 (his last), Turenne was opposed to Montecuculi, whose orders were to invade and reduce Alsace. Montecuculi intended to cross the Rhine by the bridge of Strasbourg, whose magistrates were devoted to him; but Turenne encamped under the walls of the town to overawe the corporation, who did not then dare to open their gates to the German. Accordingly Montecuculi descended the right bank of the Rhine, and gave out that he was going to besiege Philipsbourg, but constructed a bridge at Spire, and passed to the left bank.

Turenne, disregarding this initiative of his adversary, passed himself to the right bank by a bridge which he constructed at Ottenheim about ten miles

above Strasbourg, and advanced to a position which covered both Strasbourg and his bridge. After some days' hesitation, Montecuculi was obliged, or rather thought himself obliged, to follow the lead of Turenne; he returned to the right bank and came to oppose Turenne.

Thus Turenne's object of preventing the invasion of Alsace was accomplished. In speaking of Turenne having compelled Montecuculi to follow his initiative on this occasion Napoleon says, "This first victory of the campaign was real."

EXAMPLES TO CHAPTERS V. AND VI.

Marlborough's Passage of the Lines of the Mehaigne in 1705. (See Plate III.)

These lines had occupied three years in the construction. They extended from Marché aux Dames on the Meuse on the right, to Antwerp on the left; they passed by Wasseigne, where they crossed the Mehaigne river, thence over the open ground to the sources of the Little Gheet, and behind that river to Leuwe. The entrenchments consisted of redans connected by curtains, and were continuous up to this point. From Leuwe to Aerschot on the Demer river the Great Gheet and the Demer formed a natural defence; from Aerschot a line of entrenchments, similar to those described, ran to Antwerp. Protecting the flanks were the fortresses of Antwerp and Namur, and in the interval were numerous fortified posts, particularly Leuwe, Diest, Sichem, and Aerschot. The French army, amounting to 70,000 men, was disposed for the defence of the lines between the Great and Little Gheet, in positions whence the troops could be readily concentrated on

any point threatened with attack. Villeroy, with the headquarters and the main body, was at Mierdorp.

Marlborough resolved to pass this formidable barrier, defended though it was by an army superior to his own. The part which he selected for attack was between Leuwe and Heilisheim, where the lines had the Little Gheet, with its abrupt and slippery banks, as a ditch in their front. It was the strongest part of the line, and was selected by Marlborough for that very reason, as likely to be less carefully guarded by the enemy than weaker portions.

On the 17th of July Marlborough ordered Overkirk, who was in his confidence, to make a feigned attack on that part of the entrenchments between the Mehaigne and the Meuse. Overkirk crossed the Mehaigne and advanced towards the lines, sending detachments as far as the very ditch. Marlborough, to confirm the impression that the right was the point threatened, made a movement towards his own left as if to support Overkirk. These demonstrations produced their desired effect. Villeroy drew nearly all his troops from that portion of the lines between Leuwe and Heilisheim, and disposed them around Mierdorp, and between that place and Namur. While Overkirk was advancing towards the lines twelve pontoon bridges were constructed over the Mehaigne in his rear, so that his force should not

be delayed a moment by the river when the proper time should arrive for his retiring.

At eight o'clock on the evening of the 17th, the advanced guard of Marlborough's army, consisting of 20 battalions and 38 squadrons, assembled secretly in front of the right wing and marched to their right under the command of the Count de Noyelles, who was selected by Marlborough for this service on account of his daring spirit and his intimate acquaintance with the country. He alone, of the men composing the advanced guard, was in the confidence of his chief.

The remainder only received orders to march a few hours beforehand, but were ignorant of their destination.

The different corps composing the detachment were unknown to each other; and as the collection of fascines would have pointed out the object of attack, every trooper was ordered to provide himself with a small truss of forage, as if the design was merely a rapid march, but in reality for the purpose of filling up the ditch of the entrenchments.

The advanced guard directed its march towards the villages of Elixheim and Neerhespen on the Little Gheet, which the English commander had observed to be very weakly guarded, and where the ground between the Great and Little Gheet would

afford an excellent defensive position, the flanks resting on those rivers, subsequent to the passage.

An hour afterwards the main body followed in two columns; and at the same instant Overkirk repassed the Mehaigne over his twelve bridges, and connected his force with the rear of Marlborough's army.

At four o'clock in the morning of the 18th the advanced guard approached the outposts of the enemy. A part cleared the villages of Neerwinden and Neerhespen, while others obtained possession of the village and bridge of Elixheim, and of the castle of Wange which commanded a passage over the Little Gheet.

The troops forded the Gheet without waiting for the construction of pontoon bridges, and crowded across the undefended lines in such numbers that in a few minutes a strong body had entered the French lines, and a detachment of French dragoons, which was posted at Oostmal, retired.

The alarm having spread, a body of the enemy, consisting of 20 battalions and 50 squadrons, appeared on the rising ground near Oostmal, and forming order of battle opened fire with eight guns. Marlborough, who had passed with the first squadrons, saw the necessity of immediate action, and himself headed a charge of cavalry against the French, who made an obstinate resistance, but were eventually

driven away in disorder; and the main army coming up, the allies were left in undisputed possession of the lines.

Villeroy, apprised on the same morning of the passage of Marlborough at the very point which he had almost denuded of troops, hastened toward the scene of conflict, and, perceiving it was too late to repair the disaster, directed his scattered troops towards the Great Gheet, which they crossed near Judoigne, and by making a forced march they reached Louvain the same night. But so impressed was Villeroy by the enterprising spirit of his antagonist, that he gave his troops no rest until he had placed them behind the Dyle, with bridges broken down, and their left protected by the cannon of Louvain.

Marlborough's Passage of the Lines of Bouchain in 1711. (See Plate IV.)

These famous lines were constructed by Villars at the command of the French king, for the purpose of covering the northern frontier of France. They extended from the seacoast of Picardy to Namur on the Meuse. That part of the line of defence immediately concerned in the operations about to be related ran behind the river Canche from Hesdin to its source. Thence it was connected with the source of the Gy by a continuous line of redans commencing

at Oppy and terminating at Montenancourt, the flanks of which were protected by strong redoubts.

Along the Gy rivulet to its junction with the Scarpe, and thence along the Scarpe to Biache, small dams were constructed which caused inundations. Below Arras on the Scarpe, Athies, Fampoux, and Biache, were provided with *têtes-de-pont*. From Biache on the Scarpe to l'Ecluse on the Sanzet, a canal was constructed. At l'Ecluse, Pallue, and Aubanchœil-au-bac, were narrow dams bearing causeways across the inundations which existed along the course of the river between those places. These causeways were swept by artillery contained in redoubts at l'Ecluse, at Arleux opposite Pallue, and Aubigny opposite Aubanchœil-au-bac; the fire of the last also protected a dam which was laid across the canal of communication with Douay, and which by retaining the supply of water greatly impeded the navigation. Further on was the fortress of Bouchain, to besiege which was Marlborough's object. Below that place *têtes-de-pont* at Neuville and Denain covered the course of the Scheldt as far as Valenciennes; and thence a series of entrenchments, strengthened by Quesnoy and Landrecy, ran to the Sambre, along which river Maubeuge and Charleroi completed the line of defence to Namur.

Marlborough's force consisted of 129 battalions and 196 squadrons.

The French army under Villars numbered in the field 131 battalions, and 186 squadrons; it was posted behind the Scarpe, having the right at Biache, the left at Montenancourt, and head quarters in the suburbs of Arras.

Marlborough's plan was to possess himself of the triangular portion of ground between Pallue, Cambray, and the junction of the Scheldt and Sanzet rivers, which he had previously observed to afford a very strong position for a small force against a superior enemy.

So long as the French held the posts of Arleux and Aubigny he could not hope for success. They were therefore immediately attacked. Aubigny was carried without difficulty; but Arleux was a post of great importance, since it enabled the French to impede the navigation of the Scarpe below Douay, on which Marlborough depended for the arrival of his supplies, and their attention was particularly fixed upon it.

To divert the attention of Villars from his real design, Marlborough had recourse to a masterly stratagem. He knew well the lively and impatient disposition of the French marshal, and resolved to play upon it.

If the Duke were to take Arleux, to strengthen its defences, and to preserve his acquisition against all attempts to retake it, Villars would of course divine

that his adversary intended to pass the lines in that neighbourhood. But if, by taking the post, he were to show Villars that he could capture it when he pleased, and, by enlarging and strengthening it he were to delude the marshal into the belief that he thought it of importance in a defensive view, Villars would probably be induced to retake it as soon as the allied army withdrew from its neighbourhood. If then the allies menaced an attack with all their forces on a distant part of the lines, the Duke expected that Villars, finding the works from their extent to require a larger garrison than he could spare, would demolish a post which his adversary appeared to value.

Accordingly in prosecution of this design, 700 men with cannon marched from Douay to Arleux, and at night the Duke suddenly turned out the picquets of the army and moved to the heights in front of l'Ecluse to mask the attack, which was successful. No time was lost in enlarging and strengthening the work, and in mounting eight guns and two mortars.

On the night of the 9th July, Villars attempted to retake it unsuccessfully, by a night attack.

Marlborough's plans being now matured, he broke up from his position on the 20th, leaving Arleux to its fate, and marched to Bethune, where he took up a position in advance of the town.

Villars on the 21st made a parallel movement to his left, and occupied a line from Agnez on the right to Oppy on the left; but before he quitted his first position he detached sixteen battalions and sixteen squadrons to carry Arleux, and after the capture to join d'Estaing, who was with a force in the neighbourhood of Maubeuge, to make a diversion on the side of Brabant.

Arleux was carried by Marshal Montesquieu, who took 500 prisoners, garrisoned the place with 800 men, and stationed six battalions at Pallue to sustain them.

Villars was greatly elated with this success, while Marlborough pretended the deepest mortification. He changed his usual courteous demeanour and became morose; he secluded himself in his tent, and declared to all who had access to him that he would repair the disgrace his army had sustained by attacking the enemy at all hazards.

He had now the satisfaction of learning that, as he expected would be the case, Villars had evacuated Arleux and demolished the defences. He still affected to fear d'Estaing's irruption into Brabant, gave out that he must march to the defence of that province, and detached Lord Albemarle to Bethune in that direction with 12 battalions and 26 squadrons, with secret orders however not to proceed further

than that place, and to be in readiness to join him on his intended march.

The intelligence that d'Estaing had actually moved towards Brabant caused no change in his plans; and Villars meanwhile continued to strengthen the defences of his position, and wrote to the King of France boasting that he had at length brought Marlborough to his *ne plus ultra.*

On the 28th July the Duke sent off all his heavy baggage, escorted by 4 battalions and 12 squadrons under General Wood, towards Douay.

Six days' supply of bread having been secretly baked at Lille, was forwarded to the army; and the battering train was removed from the camp under a proper guard.

Thus disencumbered, Marlborough broke up his camp at daybreak on the 1st August, and marched to the front in eight columns, inclining to the right, over roads and bridges previously prepared.

The army halted that night, the left in front of Houdain, the centre at Dieval, the right at Belval, where the detachment under Lord Albemarle rejoined it, and whence parties were ostentatiously sent forward to clear the roads in the direction of the hostile left.

Villars, no longer doubting he was to be attacked, concentrated all his forces and recalled his distant garrisons, among others even the troops which had

been left at Pallue to support the garrison of Arleux, and which had remained at Pallue after that post had been abandoned.

Early in the morning of the 2nd, Marlborough again moved to the front, and halted that day with his right at Bailleul, his left at Camblain. The cavalry were instantly employed to collect fascines of small dimensions, "so as not to fatigue the infantry in marching to the attack."

On the evening of the 3rd, all the field artillery except four guns, with the pontoon train and all the remainder of the baggage, quitted the camp, escorted by a strong detachment under Brigadier Sutton, and took the road to Vitry.

At daylight on the 4th, Marlborough attended by most of his generals went to the front to reconnoitre the enemy's position. He rode along the front within cannon-shot, stopping occasionally in full view of the enemy, and pointing to different parts of his position, explaining to his generals the direction their several columns should take in advancing to the pretended attack. All were surprised at his meditating so rash a project, and believed that it proceeded partly from the disgrace Villars had put upon him in surprising Arleux, partly from desperation caused by the ill treatment he had lately received from the Queen and the British Ministry.

Having thus completely deluded both friends and

foes, he returned to camp and gave orders to prepare for battle.

During the morning General Cadogan privately quitted the camp. His mission was to assemble as large a force as possible, to be drawn from garrisons in the rear, and partly from the detachments which had already quitted the army, and to make a forced march to surprise the passage of the French lines at Aubanchœil.

While tattoo was yet beating, orders were passed round to strike the tents, with information that officers would be sent to guide the different columns to their destination. Light cavalry was sent to make a demonstration in front of the enemy's left, and to draw the attention of Villars to that quarter; which having accomplished, it returned to camp.

A little before nine the army filed off to the left in four columns, and marched with such expedition that at five o'clock in the morning of the 5th the advanced guard reached the Scarpe near Vitry, where they found the pontoon bridges ready laid for their passage, and the field artillery, which had been conducted by Brigadier Sutton.

During this march the Duke led the van at the head of 50 squadrons of the left wing. About an hour before he reached Vitry a despatch arrived from Cadogan, to say that he had crossed the causeway over the inundation of the Sanzet at Aubanchœil

without opposition, and that he was actually within the French lines with 22 battalions and 2000 horse. The Duke instantly sent orders to the infantry to hasten its march; to the cavalry of the right wing which formed the rear guard, to bring up all stragglers; and pushed on himself with his 50 squadrons to join Cadogan.

Villars had received the first information of his adversary's flank movement at 11 o'clock on the previous evening, two hours after it had commenced; but he was so confused by the artifices of Marlborough, that he confidently believed it to be only a ruse, and kept his troops under arms, in expectation of immediate attack, until two in the morning, when the arrival of fresh intelligence put an end to all doubt. The French marshal then put himself at the head of the cavalry of his right wing, and pushed on with all speed to his right, leaving the infantry to follow.

But Marlborough had too much start, and his previous arrangements had been too sagacious to admit of his design being now frustrated by any haste on the part of Villars. He reached Aubanchœil with his field train and the advanced guard at eight in the morning of the 5th, and as the cavalry rapidly passed the Sanzet he placed them in order of battle on the opposite side of the river.

The left wing of the army following the Duke

crossed at Aubanchœil. The right wing diverged to the right at Vitry, and passing by Arleux crossed the Sanzet, and entered the French lines over bridges which were constructed at Pallue.

Villars, who in his haste had outstripped his cavalry, and narrowly escaped capture by the allied outposts in the defile of Sauchy, was obliged to turn back to meet his advancing squadrons, which came up to him about 10 o'clock in the morning; but by this time he could perceive the allied infantry marching in a parallel direction on the other side of the Sanzet, and soon afterwards crossing the river at Pallue.

By 11 o'clock Marlborough had formed a considerable body of infantry and cavalry from Oisy on the right, towards Espinoy on the left.

By four in the afternoon the whole right wing was in position, and before dark the whole of the left wing had entered the new ground, and extended the Duke's line towards the Scheldt.

About dusk of the same evening, the heads of the French infantry columns arriving, Villars halted them in rear of Marquion for the night, and next morning (the 6th) placed his army in order of battle, the right resting on the Scheldt behind Cambray, the centre in the wood of Bourlon, and the left resting on the marsh of Sains.

Thus Marlborough accomplished the passage of

the French lines. His object was to invest Bouchain, which Villars could not prevent without first taking post on the right bank of the Scheldt.

This movement of Villars would, it is true, uncover Arras, a much more important place, but Marlborough considered his means too limited to attempt its reduction. Marlborough was urged to attack Villars where he was; but the French line was too short, and its flanks too well protected to render success probable. The Duke, being apprised that the French army was drawing towards its right, judged that Villars intended to pass the Scheldt, and as it was a great object for the allies to cross the river before him, Marlborough advanced his army to within cannon-shot of Cambray, which rendered it impossible for Villars then to effect the passage.

While the enemy was thus held in check, eight pontoon bridges were expeditiously thrown across the Scheldt below Etrun, and the whole army filing to the left marched by lines along the heights, the rear protected by a strong force of cavalry and infantry.

At eight o'clock the left wing began to cross; the cavalry of the rear guard posted on the heights in rear, and the infantry, occupying Etrun and an old Roman camp, protected the passage. Villars, despairing of preventing him, now allowed Marlborough to proceed to the investment of Bouchain without further molestation.

These operations of Marlborough illustrate in the most complete manner the remarks contained in the chapters on "Lines of Defence," and on "the Employment of Moral Agents." They show the value of secrecy. Marlborough trusted no one with his design until the moment came for its execution. They are also striking examples of Maxim 30, as regards Time.

Examples of the Passage of Rivers.

Alexander's Passage of the Hydaspes.

After crossing the Indus, Alexander advanced to the Hydaspes, and found Porus posted behind that river with a large army determined to oppose his passage. Alexander therefore caused the vessels in which his army had crossed the Indus to be taken to pieces and conveyed to the Hydaspes, where they were again put together and launched. The Macedonian army meanwhile encamping on the bank opposite to Porus, Alexander would not attempt the passage of the river by force because it was swollen at that season by the melting of the Caucasian snows, and there being therefore no safe fords, his cavalry must have been ferried over on rafts; Porus had a great number of elephants, and Alexander feared that the sight of those animals would so frighten his horses that they would jump off the rafts into the river and be drowned. He accordingly had recourse to stratagem.

He ordered vast stores of corn to be brought into his camp from the surrounding country, that Porus might imagine it was his intention to remain in his present position until the fall of the waters in the winter season, and then to force his way over. He also favoured a report to that effect.

Meanwhile he detached parties up and down the river, who, by continual demonstrations at different points, kept Porus in constant alarm and divided his attention. For several successive nights, the Macedonians were ordered to make a great din of preparation at many different points with loud shouts, as if they were about to cross the river immediately. When this had gone on for several nights, which Porus had employed in moving his troops hither and thither to oppose the threatened passage, and when Porus found that nothing was really attempted, he became regardless of these night alarms and did not move from his camp, being satisfied with placing guards along the banks of the river.

Alexander then judged the time had arrived for executing his plan.

About eighteen miles above the Macedonian camp there was, on the same bank of the river, a large rock covered with trees; and in the middle of the river opposite this rock was a large wooded island. Alexander selected this spot for his passage. The rock would conceal his preparations; his troops might

reach the island unperceived, and they might thence reach the further bank before their intention was discovered.

Craterus was left in command of the Macedonian camp with the main body. His orders were not to attempt to pass the river until he saw Porus quit his station on the opposite bank, either to march against Alexander or to retire before him.

Halfway between Craterus and the selected point of passage, a strong detachment of cavalry and infantry was stationed, with orders to ferry over whenever they saw Alexander engaged on the opposite side.

Alexander himself, with 6000 foot and 5000 horse, marched at a distance from the river, so as not to be seen by the enemy. His preparations for crossing were completed during the night, favoured by a violent storm, which concealed their noise from the enemy's parties on the opposite bank. A little before daybreak the passage commenced. The troops all reached the island unperceived, and commenced to cross from the island to the hostile shore. The Indians, not being able to oppose the passage, went off to warn Porus with all speed.

Alexander, leaving his infantry to follow, pushed on towards the Indian camp with his cavalry, in the idea that if Porus advanced against him he might hold him in check until the arrival of the infantry;

and on the other hand that if Porus discouraged by his passage of the river should retire, Alexander would be at hand to pursue him. Porus however marched out of his camp to meet Alexander, leaving a part of his army and some elephants to frighten the horses of Craterus if he should endeavour to pass the river.

It is reasonable to conclude that, when Alexander arrived in his march opposite the detachment which had been posted midway between him and Craterus, it crossed the river to reinforce him.

Porus was defeated; and Craterus, seeing the day going against the Indian king, passed over his fresh troops and made a prodigious slaughter of the flying enemy.

Observations.

In comparing the above account with the remarks on the passage of rivers in the chapter on Lines of Defence, it will be found that Alexander acted in accordance with the general principles therein explained. He selected a point at a distance from his camp, and having distracted the enemy's attention by demonstrations of his light troops along the river, suddenly marched to the point selected and surprised a passage.

The point of passage was chosen also in obedience to the general principles referred to. The wooded rock (probably a bluff) served the same purpose as

an affluent would have done to conceal his preparations; the wooded island reduced practically the breadth of the river to that of the channel between it and the enemy's shore. Although there was not a sufficient force on the opposite bank to oppose Alexander's passage, concealment from the enemy's outposts was essential, as, if they had early discovered his preparations, it would have given time to Porus to receive the intelligence and to arrive on the spot with all his cavalry to oppose the landing. Alexander's proceedings to harass the enemy, and afterwards lull him into security, are a good example of Strategical Artifice.

There is a striking similarity between this operation and the passage of the Rhone by Hannibal in the year 218 B. C.

Attempted Passage of the River Aar by the Archduke Charles in 1799.

The Archduke had received a strong reinforcement by the arrival of a Russian auxiliary force, and he was desirous of repairing the reverses the left wing of his army had sustained from the French. At the time of which we speak the French occupied an immensely extended line, viz., from the Upper Valais and the Simplon on the right, to Brisach and Kehl on the left. It passed by Saint Gothard, and defended all the passages from Switzerland into Italy

and the Grisons, extended behind the left bank of the Upper Linth, by the lakes of Wallenstadt and Zurich, and behind the Limat to the Aar; thence by the left bank of the Aar and the left bank of the Rhine to Basle, Brisach, and Kehl.

The Archduke chose as his point of passage of the Aar a part of that river near Dettingen, which is a little above Klingenau. Dettingen is a large village on the right bank; on the left bank just opposite is the hamlet of Klein Dettingen. At this point the course of the river formed a deep loop, convex or re-entering towards the Archduke, which enabled him to place his artillery on the right bank in such a manner that it swept a large space on the left bank with cross and reverse fire. The right bank also completely commanded the left.

On the night of the 17th August he commenced the construction of two bridges. He was favoured by a thick fog, and his troops worked at the bridges in complete security under the protection of thirty-eight guns, which rendered it impossible for the enemy to approach the left bank.

Only one circumstance was unfavourable, but that one was sufficient to cause the failure of the attempt. This was the nature of the bottom, which was so rocky as to afford no hold for the anchors. At nine o'clock next morning when the fog cleared away, one of the bridges was only half finished and the other

was hardly commenced; and towards noon the French generals Ney and Heudelet, who had been alarmed by the cannonade, arrived with 12,000 men and occupied an elevated plateau and a wood which commanded the plain of Klein Dettingen; at the same time all the disposable French detachments were converging to the same point.

The Archduke therefore judged the operation no longer feasible; but such was the commanding nature of his position that it was agreed with the French generals that he should be permitted to withdraw his pontoons unmolested on condition that he should silence his guns.

Observations.

The above example is given because more is frequently learnt from failure than from success.

After reading this account the great importance of being acquainted with the nature of the bed of a river will be properly appreciated.

The defensive line occupied by the French army was composed partly of mountains, partly of rivers and lakes. The general neighbourhood of the point which the Archduke chose for endeavouring to break through that line, was determined by the line of operations which he considered the most favourable for applying the principles of war at his adversary's expense.

Had he succeeded in passing the Aar, he might have turned to his left, marched up the river, destroyed the bridges of Brugg, Aarau, and Olten, on which the French right depended for communication with the left; — thus applying Principle 2. The French army would have been cut in two; and the Archduke would have applied Principle 1. by marching with his whole force against the successive fractions of the French left which were distributed along the Rhine.

The general neighbourhood of the point of attack, then, having been determined by the above considerations, the point itself was determined by the local peculiarities which have been described, which could hardly have been more favourable except in the one particular of anchorage.

It may be thought that the Archduke was wanting in enterprise in not persisting in his attempt, considering the immense preponderance of artillery-fire at his command, and the safety in which his troops might have formed on the opposite bank under its protection.

He had 40,000 men. After working fifteen hours his bridges were not half finished. Ney had arrived with 12,000 men and occupied a commanding position. Fifteen hours more would probably have seen 30,000 men in that position which the Archduke must carry

before he could advance; and here the advantage of artillery would be entirely in favour of the French.

Thus although the French could not have prevented the passage, it had become dangerous for the Archduke to effect it, as he would probably have been beaten afterwards with the river in his rear.

CHAP. VII.

MANŒUVRES.

WITHOUT a perfect knowledge of the art of handling troops, no man can be a great general; and drill is the basis of the perfection of the soldier as a military machine. Its object is to ensure that, through the habit acquired by constant exercise, a certain action of the soldier shall instantly and almost mechanically follow on a certain word of command spoken by the officer. It is an undoubted fact that many men who in their natural state would with difficulty be induced to face any danger, after they have been subjected to drill and discipline will, by reason of the force of the habit of obedience, follow their officer to almost certain death. Association and the fear of shame often confer a boldness which would not be found to exist in the same individual if solely dependent on himself. It may therefore be regarded as an axiom that drill and discipline of men in masses will increase their courage: if not courage of the highest order, it is still that which serves our turn, viz. readiness to attack, and obstinacy to withstand, an enemy.

In all armies, ancient and modern, the line of battle

has been divided into units, whose magnitude has been determined by the average range of the human voice. The unit should be as large as is consistent with the possibility of the men composing it, when formed in line, being directed by the voice of their commander.

The battalion is taken as the unit of the infantry line. The squadron and the battery as that of the cavalry and artillery respectively.

In our army 500 men in two ranks form a line of about 150 yards, as many as are usually found in the field, supernumeraries and non-effectives being taken into account; a greater extent of line might be inconvenient, although it is certain that in an attack the larger the mass to which unity of impulse can be communicated without confusion, the greater will be the chances of success.

The art of directing troops in battle consists in the just employment of the three arms in such a manner that they shall mutually support and defend each other to as great an extent as possible. No fixed rule can be laid down as to their relative proportion in the composition of an army. That must depend very much on the nature of the country in which an army operates.

But where such country is favourable to the march and action of those arms, a good proportion is —

Cavalry, one fourth of the infantry;

Artillery, four guns for every thousand men of infantry and cavalry united.

A few remarks on the combined employment of the three arms are necessary as an introduction to the subject of manœuvring.

1st. Infantry alone should never be exposed to the attacks of cavalry and infantry.

In such a case, the infantry is obliged to show a front to the hostile infantry, while the cavalry charge it in flank, if in motion. Or if it form squares when threatened by cavalry, the small fronts of the squares may be overwhelmed by the superior fire of the lines of opposing infantry, and charged by them during the confusion caused by that fire, while the cavalry is ready to take advantage of any wavering to complete the rout and to cut up the fugitives.

2nd. Infantry alone should not be exposed to attack from artillery and infantry.

The fire of the artillery will throw it into confusion, and the hostile infantry will complete the defeat. Nothing can be more opposed to the rules of war than for infantry alone to attack an enemy's infantry in position which is defended by artillery. The fire of the latter will throw the attacking force into confusion, and will expose it to an easy overthrow if it should succeed in reaching the position to be assaulted.

3rd. Infantry should not be exposed to attack from cavalry and artillery. This would be the most fatal mistake of all, for the infantry must remain stationary or must move very slowly and cumbrously in square under a threatened charge of cavalry, while the artillery destroys it leisurely; and should the infantry break to avoid the destruction, the cavalry will finish what the guns began.

4th. Infantry alone should never attack artillery in position, even though that artillery be unprotected by infantry or cavalry, where the attacking force has to march any distance exposed to its fire. Napoleon says, "there is no infantry, however brave, which can without artillery march with impunity ten or twelve hundred yards against sixteen pieces of cannon well placed and well served: before it could accomplish two-thirds of the distance, those men would be killed, wounded, or dispersed."

When, unavoidably, an infantry force is exposed to attack from any two of the three arms combined, it must supply the disadvantage by its position.

It will occupy heights where it cannot be reached by artillery or cavalry; or if none such are at hand, the most unfavourable ground possible for the action of those arms; and it will make a liberal use of the spade and pickaxe.

In the same way, artillery should never be exposed to attack from any two of the three arms combined.

If from artillery and infantry, the artillery will cover the advance of its infantry by engaging the enemy's guns, which must decamp to escape capture.

If from artillery and cavalry, the disadvantage is far greater; for the cavalry will be covered by its guns, and its greater rapidity of movement will probably enable it to capture those of the enemy.

Artillery alone should never be exposed to attack from cavalry though also alone. For on account of the rapidity of the latter it will clear the intervening space with small loss as compared with infantry, and will capture the guns opposed to it.

Cavalry alone should not be opposed to either of the other two arms combined with cavalry.

If to artillery and cavalry, it will be attacked by the latter at a disadvantage when confused by the fire of the former.

If to infantry and cavalry, it must never attempt to attack unless out of reach of the infantry; otherwise it will be confused by the powerful infantry fire at the same time that it is charged by the cavalry.

In the same way as cavalry may charge artillery alone, it may charge it when combined with infantry. Although its loss in this instance would be much greater than in the former, cavalry cannot be irretrievably ruined without the action of hostile cavalry. Its nature permits it to disperse to avoid the fire of the other two arms, and to rally out of their reach.

famous Balaklava charge is an example of above remarks.

The English cavalry rode through a devastating storm of fire from batteries in front and flank; and, though sorely diminished, the object of the charge would have been accomplished had it been opposed by those batteries alone. The guns were captured, but the assailants, if three times their number, could not have held them against what would still have been a greatly superior cavalry supported by the fire of many thousand infantry.

Artillery.

Artillery in a position must be disposed in the manner best adapted to defend by its fire all approach on the part of an enemy. It has already been said that its effective fire will depend very much on the nature of the ground in its front. If the ground be soft or marshy, the balls will either plunge into the earth at once, or will make a few feeble bounds. If it be broken by ravines, or by dips in the ground, which run across the line of fire, the balls will be arrested by these irregularities.

If artillery is posted on very high ground, the balls will plunge into the ground where they strike.

Artillery should be so posted, and the ground in front of it be such, that its fire shall sweep the surface of the ground to the full extent of its range. Its

place in the line of battle must depend on the nature of the position; but its object being to sweep the front of the position so as to take the attacking columns in flank, and to cross its fire as much as possible on the ground they must traverse, the guns must be posted with that view. The concave order of battle is the most favourable for artillery fire, because the fire converges from every part of the line towards the centre, and the flanks being thrown forward, give a flanking fire on the attacking columns the more decided in proportion to the forwardness of the flanks of the position. As a general rule, the places for artillery are the salient and retired points of the position, so that the fire from these points may cross midway between them. The fire from any two parts should cross at as great an angle as possible, so that the troops may have the power of advancing towards an enemy for a considerable distance without masking the fire of the guns.

Artillery must be so placed that its movements are perfectly free and unimpeded by other troops.

When it advances to attack, it must always be supported by infantry or cavalry.

As a general rule, artillery does not fire upon the enemy's artillery, except as a diversion. The object of its fire is to disorganise and disperse masses of cavalry and infantry; but in every action artillery does engage artillery, in order to protect the other

troops who may be suffering severely from the hostile fire, either while remaining in their position, or while advancing to attack.

Artillery is undoubtedly the arm whose superiority in the number and calibre of guns to that of an enemy it has been hitherto the most difficult to counteract, as well on account of such actual superiority as of the fear and dismay its effects are calculated to produce. At Wagram Napoleon won the battle when its chances were going against him, by uniting 100 guns, and advancing them to attack the enemy's centre: these guns destroyed everything opposed to them.

What the effect of the improved rifle may have on the decision of a battle is as yet unknown; it has not been fairly tried. But 100 *good* marksmen, at 800 yards' distance, would soon silence a battery. The only question is whether the aim can be brought to such perfection as will enable marksmen at that distance seriously to annoy an enemy. If so, artillery will lose its preponderance, and infantry will become the arm whose superiority will be the most decisive on the issue of an engagement. For artillery to maintain its efficiency against such adversaries, the gunners must be covered by a mantelet, and this would afford a larger aim to the enemy's guns.

Cavalry.

The effective force of cavalry is in direct proportion to the *momentum* of its charge. The definition of "momentum" is, the weight of a body multiplied by its velocity. Hence velocity and weight may be considered as elements in the effect of a charge. The greatest momentum will be obtained by light men mounted on powerful horses. Several letters have lately appeared in the newspapers, advocating light men on light horses; but this is a complete fallacy. By employing powerful horses (not heavy but powerful and active), both weight and velocity are ensured.

In a cavalry encounter, victory will be to that side which can produce the last reserve; for, from the nature of the arm, a victorious body of cavalry becomes so disordered in pursuit of a flying enemy, that fresh squadrons coming up on the other side will always turn the tables. Thus it will be found that all great cavalry actions have been an alternation of victory and defeat, until the last fresh squadrons which are brought up decide the encounter in favour of the side which can produce them.

Cavalry are generally posted behind the flanks of a position, where the nature of the ground admits it, for the purpose of protecting them from being turned; or for the purpose of passing rapidly to the front to attack a flank of the enemy's line.

No absolute rule can be laid down. It must be posted in the manner which will best aid in executing the general's scheme of battle; but it should never, if it can possibly be avoided, be exposed to the fire of an enemy until the proper moment comes for it to attack.

In a successful charge, cavalry are very apt to be tempted to pursue too far. A cavalry commander should always bear in mind the fate of Rupert at Naseby, and of John de Vert at Nordlingen, and keep his squadrons well in hand. If the routed squadrons of the enemy are pursued off the field of battle, as is frequently the case, both sides are in the same relative position as before; an equal number of squadrons are absent; that is all; whereas, if the victorious squadrons remained on the field, they might influence decisively the other events of the day.

Hannibal owed nearly all his victories to the discipline of his cavalry and excellence of its commanders, who, after driving the hostile cavalry off the field, invariably returned to assist in the destruction of the hostile infantry.

Hannibal owed the loss of the battle of Zama to the similar success and opportune return of the Roman cavalry.

Cavalry require more instruction than infantry, and more officers. In all armies there is the distinction of light and heavy cavalry. The first are

employed for outpost duty; the last are kept in masses to produce a decisive effect by charges during a battle, although they are sometimes employed with the advanced and rear guards as a support to the light cavalry.

Jomini says that heavy cavalry should be held in reserve, and only employed at the end of a battle. It is certainly desirable to have a reserve of heavy cavalry; but it would be absurd thus to paralyse its action during a whole battle, and neglect the opportunity of striking with it a decisive blow, which might occur at any moment.

In the English army the distinction of light and heavy cavalry is more nominal than real. Our light cavalry horses carry heavy cavalry men weighing, in marching order, eighteen or nineteen stone.

Because our cavalry is found to be the most powerful in the world in a charge, is that any reason why we should not make it more powerful?

Our present light cavalry horses, if mounted with nervous active men not taller than five feet eight inches, weighing with all trappings fourteen stone, would ride through any cavalry in the world. What they would lose in deadweight, they would gain in velocity and vigour as regards their effect in a charge.

It is to be hoped that the following alterations may some day be made in our light cavalry system: viz. —

1st. The weight of the rider to be reduced to a maximum of twelve stone, and the weight carried by the horse to a maximum of fourteen stone.

And in both light and heavy cavalry,—

2nd. The abolition of two ranks, and the adoption of rank entire.

3rd. The substitution of a good revolver pistol for the heavy, cumbrous, and useless carbine.

Infantry.

There are three different formations of infantry: viz. skirmishers, columns, and lines.

Skirmishers require more individual training, intelligence, and self-reliance, than men in close order who fight shoulder to shoulder, whose duty it is to advance, to stand firm, or to retire, by direct command alone. The skirmisher must frequently act on his own judgment: he should know something of the principles of tactics; he should have an eye quick to seize a position whence, sheltered himself, he may annoy his enemy. Although at a review skirmishers advance, retire, or fire, by command; in the heat of action, on broken ground, in a wood, every man must judge for himself and "fight for his own hand."

Napoleon set the greatest importance on the training of skirmishers. He says that they should be

accustomed when at a distance from their officers to preserve their coolness, not to allow themselves to be affected by groundless fears, to keep constantly within reach of each other for mutual support, to unite four to four to resist cavalry skirmishers; eight to eight, or sixteen to sixteen, to resist a squadron; and so to rejoin their supports without precipitation, frequently facing about. The supports then if pressed retire, fighting with the same deliberation, on their reserves. There is no doubt that the best instructed and most intelligent men make the best troops for skirmishing or outpost duty, which includes all the details of advance and rear guards. Some argue in consequence that light troops should be devoted exclusively to those services, and that they should never be employed as troops of the line.

Jomini went so far as to say that light troops, being intended to fight and march independently, do not require to be able to manœuvre like troops of the line, that it suffices to accustom them to rally rapidly at the approach of cavalry into small squares or to shelter themselves behind obstacles; whereas in truth, as appears from the above opinion of Napoleon, they require to be more practised in manœuvring than the others. Since the time of Vauban the distinctions of light and heavy armed infantry have ceased to exist. Doubtless a general will select his best instructed battalions for out-post duty;

but all companies of all battalions should be equally instructed in the duties of light troops, as a rule.

In our army there is no such thing as a proper system of instruction in the duties of light troops. Few regiments are even properly trained to skirmish. The remedy of this rests with the generals of districts in time of peace. It is a great mistake to suppose that men do not require to be so well disciplined as other troops to act as skirmishers; they require to be better disciplined. Any officer of Sir John Moore's famous light division will speak as to this. We have not had a real light division since the Peninsular war.

The order of column is generally the order of march on account of its compactness, when not actually within reach of an enemy. It must absolutely be the order of march of any body of men threatened with an attack from cavalry, because from that order square is formed in the time which is required by a section to wheel a quarter circle. In marching to the front to attack an enemy in position the column formation is generally employed until within a certain distance of him; but the order in which troops actually come into collision with the enemy must be *always* on as great a front as their numbers will permit. The word "collision" does not merely signify the contact of a charge. Bodies are in collision when they are at such a distance as to be able to

fire upon each other with effect. Therefore, in marching to attack in column, the deployment into line must be effected beyond the reach of any very destructive fire from the enemy; for if he is drawn up in line, and the column advance within reach of his fire before it begins to deploy, it will be subjected to a great disadvantage. The column can only oppose to the fire of the whole line that of its leading division; the rear divisions as they successively become unmasked will be exposed to a powerful fire while still marching to a flank, which must inevitably confuse them. In short, such attempted deployments under the fire of a hostile line always result in defeat.

The result will be the same where a column attempting to deploy is charged by a hostile line. Examples of this are to be found everywhere.

At Albuera, at the most critical period of the battle, the French had established large masses in column on the British right flank, and moved forward as if to certain victory, when the reinforcements which were ordered up advanced in line to oppose them. These consisted only of three brigades. The French attack was formed of the 5th corps, with a strong reserve in rear, in column; and its fate is thus described by Napier: — "In vain did Soult with voice and gesture animate his Frenchmen; in vain did the hardiest veterans, breaking from the

crowded columns, sacrifice their lives to gain time for the mass to open out on such a fair field; in vain did the mass itself bear up, and fiercely striving fire indiscriminately on friends and foes, while the horsemen hovering on the flank, threatened to charge the advancing line. Nothing could stop that astonishing infantry. No sudden burst of undisciplined valour, no nervous enthusiasm weakened the stability of their order; their flashing eyes were bent on the dark columns in their front, their measured tread shook the ground, their dreadful vollies swept away the head of every formation, their deafening shouts overpowered the dissonant cries that broke from all parts of the tumultuous crowd, as slowly and with a horrid carnage it was pushed by the incessant vigour of the attack to the farthest edge of the height. There the French reserve, mixing with the struggling multitude, endeavoured to restore the fight, but only augmented the irremediable disorder; and the mighty mass, giving way like a loosened cliff, went headlong down the steep."

The repulse and ruin of the two attacking columns of the imperial guard at Waterloo, the one by the brigade of guards, the other by a brigade of British infantry of the line; and the overthrow at Inkerman of a dense column of several thousand Russians by the charge of one British regiment in line, are additional instances.

Maxim 1. *As a general rule the column is the most convenient order of march, the line is the best formation for collision.*

Every rule in war may, if true, be traced to one of the three principles. The present is derived from No. 1., as by attacking lines with columns the greater number of the men composing the column are unable either to fire or act offensively in any manner, while every man in the line can be brought into play, thus bringing the greater number of the line in contact with the smaller of the column.

It must be borne in mind that no rule can be absolute in war; every one is subject to modification from actual circumstances. Although the column is the most convenient order of march generally, and the only safe order when exposed to cavalry attack, it is not always the safest.

Maxim 2. *All movements of troops must be made in such a manner as will expose them to the least possible amount of injury from an enemy.*

Therefore in the case where troops advancing to attack an enemy's position are exposed to the fire of a powerful artillery, the advance should be made in line.

Maxim 3. *All movements in presence of an enemy must be made in that order which will admit of the*

formation of the line of battle in the shortest possible time.

This maxim is peculiarly applicable to a flank march within reach of an enemy, or to a movement whose object is to prolong one flank. In moving to the front when threatened by cavalry, the march is executed in column at quarter distance, because from that formation the order of battle is assumed in the shortest possible time (viz. that of the square).

In moving to a flank within reach of an enemy, where cavalry attack is not imminent, or where sufficient protection is afforded by the cavalry of the army so moving, the march should be executed in column at full distance, because (the line having been established as the proper order for collision—see Maxim 1.) from that formation line is formed with the least possible delay by a simple wheel of divisions into line.

When it is desired to prolong a line to one flank to a comparatively small extent, it may be done by the march of successive battalions or brigades from the other flank in rear of the line. The flank march is in this case protected and concealed by the general line.

When time presses, the same object may be accomplished by moving up to the flank of the first line the nearest battalions or brigades of the second line, making a simultaneous flank movement of the

second line to a sufficient extent to cover the prolongation of the first, and supplying its deficiency on the other flank by battalions or brigades drawn from the first line.

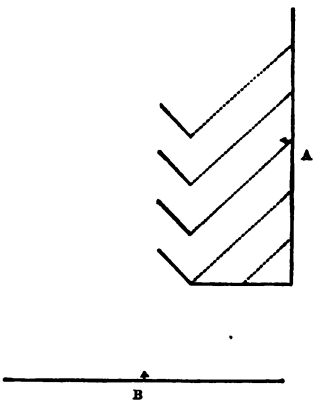
Maxim 4. *Of all the attacks to which a body of troops can be exposed, that upon a flank is the most dangerous.*

This is deduced from Principle 1. For suppose a battalion in line, which we may call A, to be attacked by another line B, which has succeeded in establishing itself perpendicularly to the direction of A, on one of its flanks. The commander of A will endeavour to change his front so as to form a line parallel to B, in order to meet its attack. Should B be at a sufficient distance to enable A to complete its change of front, no inconvenience will ensue; but if not, only a part of A will have been able to assume the required parallel formation at the time when it is attacked by B's whole force, and driven back on the remaining divisions of the battalion, which will be attacked and overthrown by B in succession.

Figure 1. shows two battalions in line in the relative positions above described. It will be seen that two of A's divisions have completed the formation parellel to B, while its other divisions are marching in echellon and lending their flank to B's

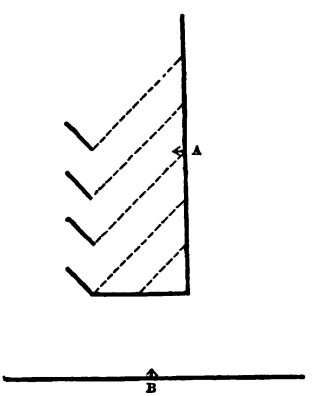
attack. It is evident that after B's charge has overthrown the two standing left divisions of A, it will

Fig. 1.



successively come in contact with the remaining divisions in echellon, or the mass of B will come in contact with successive fractions of A.

Fig. 2.

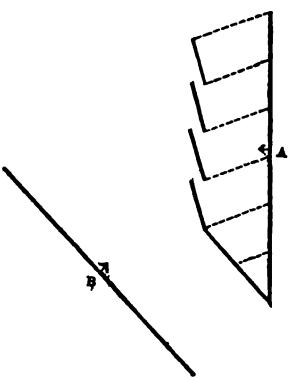


If the relative positions of the two battalions were

as shown in Fig. 2., B's advantage would be still greater, as by wheeling forward the right of B's line, the standing divisions of A would be overlapped and attacked both in front and flank.

The advantage to B is equally decided, though less in degree, where its position is oblique to that of

Fig. 3.



A, as shown in Fig. 3. In this case A requires less time to complete the parallel formation; but if attacked before the formation is completed, although the divisions in echellon are nearer to each other than in the previous cases, they will still be attacked in detail.

Therefore, the most advantageous direction which a line can assume for the purpose of attacking another line in flank, is perpendicular to that of the line to be attacked; and the more nearly perpendicular, the greater is the advantage.

The difficulty of opposing resistance to a direct or oblique flank attack, is based on the fact that the power of a man to resist a shock or pressure is far greater when that pressure is exercised directly on his front, than when it is applied obliquely to his front or directly to his side. In the last-named case the power of resistance is least. In Fig 3., if the line B came in contact with A, the men of B would act straight to their front, *i. e.* in the most advantageous manner; while those of A would receive the shock obliquely.

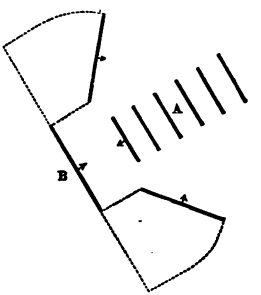
Precisely the same reasoning is applicable to two armies, substituting brigades or divisions of the army for divisions of the battalion.

An attack on the direct rear is not nearly so dangerous to a body of troops as one on a flank; because a line may instantly be formed parallel to that of the assailants by simply facing about, and meeting the attack with the rear rank in front: although this order is inconvenient for troops which have not been accustomed to it, they may still make a successful defence. But a good officer will accustom his men to act equally well in every possible formation; he will not only train them to act rear rank in front, but he will reverse the order of his divisions, and will accustom the men to "tell themselves off" in any new and accidental order in which they may be placed. As a general rule no ma-

nœuvres can be too complicated for the practice of parade drill, to exercise the intelligence and self-reliance of the soldier; but before an enemy none but the simplest movements should be voluntarily undertaken.

The attack on the head of a column is analogous to that on the flank of a line; but it is more ruinous

Fig. 4.

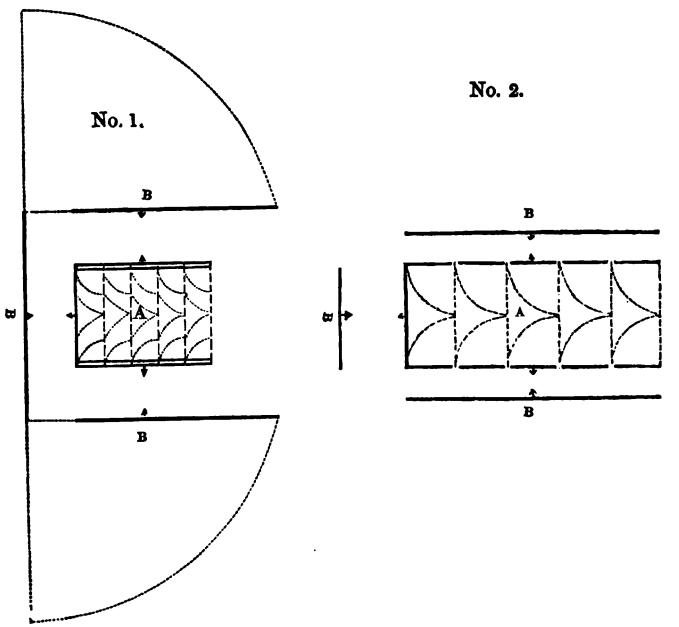


in its effects. If A in column be attacked by B in line, Fig. 4., two divisions of B may assail the leading division of the column in front, while the flank divisions of B wheel up and act against both flanks. If the column be at quarter distance, the flank sections of companies may wheel outwards to meet the flank attacks. If at half distance, sub-divisions may wheel outwards. In the last case every man of the column would be deployed, and if the attack were made parallel to the flanks so formed, the advantage to the assailants would not be great;

it would chiefly arise from the liability of the defenders (standing back to back) to be driven back on each other and thrown into confusion.

Figure 5. No. 1. shows a column at quarter dis-

Fig. 5.



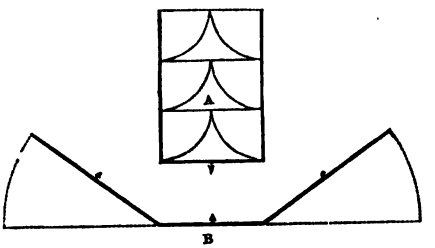
tance receiving an attack from a line of equal numerical strength.

No. 2. A column at half distance.

In the first case, the flanks of the two side faces are overlapped. In the second case, the three fronts of the column are equal in extent to those of the line.

But it would not be a judicious proceeding to attack a column which has assumed the formation shown in Fig. 5. Nos. 1 & 2. in a parallel order.

Fig. 6.



The attacking line should wheel its wings inwards, so as to advance diagonally against the two corners of the column, by which means the front face would be attacked on both flanks at once, and the side faces on one flank. The column would be absolutely powerless to resist this mode of attack. The centre company of B, however, should be left standing, facing the head of the column and firing upon it until it becomes masked by the converging march of the wings. An illustration may be drawn from this subject of the great advantage of accustoming troops to act in every possible order, natural or reversed. It may be conceived that a column right in front as in Fig. 6., threatened with attack on its head from a hostile line, may have, before it is charged by the enemy, only half the time which would be required to effect the parallel formation (in its natural order), which is the

only safe mode of receiving an attack. This would be done by deploying on the leading division; but before the movement could be more than half executed the enemy would be upon them. But if the movement were executed on No. 1. company, as the centre of the line, by wheeling up the other subdivisions on the right and left, the parallel formation would be executed in sufficient time (viz. half the time required for the deployment in natural order). This is a very simple manœuvre; yet unless the men had been previously trained to act in reversed order, confusion would certainly arise.

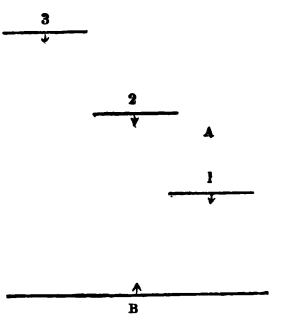
Again a column right in front may be threatened with an attack which requires that it shall stretch out its line to the right, instead of the left of the leading division which would be the natural formation. This would effect a simple reversal of the order of the divisions in the line.

Or it may be necessary that the line shall stretch out both to the right and left of the leading division, though not equally, to prevent its being outflanked, as it might be if formed in the natural order. In this case, where time pressed, the rear divisions should be brought up alternately on the right and left of the leading division, apportioning them in the number due to prolong each flank to the required extent,—a very simple manœuvre, but one that would infallibly break down in the execution without previous practice.

The echellon formation combines to a certain extent the advantages of the line and column. For mere changes of position the movement in oblique echellon saves much time. For an advance against an enemy in position, the direct echellon formation presents advantages afforded by no other. It combines the greater correctness of the march in column with the superior force, for collision of the line.

Figure 7. shows two battalions A and B coming

Fig. 7.



into collision, the one in line, the other in direct echellon. Here it may appear at first sight that B will successively overwhelm the divisions of A, as in the cases before given; but this is not so; B advancing comes in contact with No. 1. division of A on an equal front with it; the remaining portion of B's line dare not wheel up to attack A 1 in flank, because its own flank would be exposed to A 2 and A 3. Indeed it may easily be conceived that the

echellon has the advantage in collision, for the part of B's line in the neighbourhood of the part engaged with A 1 will to a certain extent be disordered by the shock and the struggle, while A 2 and A 3 come up successively in perfect order.

In advancing to attack an enemy in position whose superiority of force will enable him to oppose an equal front to that of your whole line, while with his remaining troops he may turn one of your flanks, the advance in direct echellon is peculiarly applicable.

The head of the echellon is the only part the enemy can attack without exposing his own flank. The retired flank can only be turned by a long march on the part of the enemy; it may therefore be considered safe, and the advanced wing, with which you first attack, may be reinforced at the expense of that which is retired. Thus, in less than the time which would be required by the enemy to turn the retired flank, you may gain some decided advantage with the other.

In general terms, the advantages of the echellon formation are that one flank is thereby secure from attack — each division of the echellon covers the flank of that which precedes it, and the exposed flank may be reinforced at the expense of the other; thereby observing Maxim 19., since, by reason of the distance which separates them, one wing of the enemy

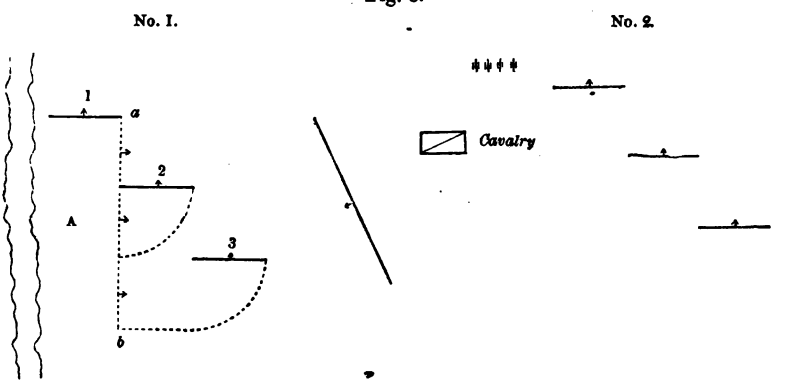
is held in check by the retired wing of the echellon, which has been weakened in order to reinforce the head of the echellon which is the point of collision.

The retired flank being safe, it remains to secure the head of the echellon from flank attack.

If, therefore, one flank of your army already rests upon a river, marsh, or any other natural obstacle whose direction is parallel to the line of your advance, the protected flank must be the head of the echellon, and the other must be refused. In this case the greatest attention must be paid to prevent the enemy by any possibility from turning the retired flank, as, if he should succeed in doing so, your line would be forced back on the pivot of the other flank, and would be exposed to attack with the obstacle running along its rear, which would prevent the possibility of retreat if defeated.

Fig. 8. No. 1., shows a force A advancing by

Fig. 8.



direct echellon from the left, the head of the echellon protected from flank attack by a river; the dotted line *a b* shows the new position A may be forced to assume with its back to the river, in the event of a force B threatening the retired flank.

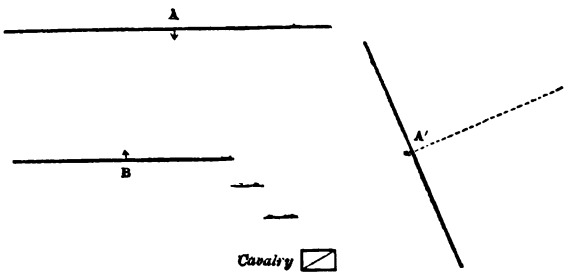
In the case of there being no flank support for the head of the echellon, the greater part of the artillery and cavalry must support that flank, as shown in Fig. 8., No. 2.

If two armies of equal strength are opposed to each other, and one of them has its flanks strongly posted, while one or both of the flanks of the other are unsupported; — the general line of the last may be parallel to that of the first and the exposed flank or flanks may be protected by several bodies of troops being posted in echellon to their rear; — the enemy dare not attack the exposed flank, because his own flank would be in danger from the troops in echellon, and he could not make a long flank march to turn the flank of those troops without exposing his line of retreat.

Fig. 9. shows two armies, A and B, of which A has both flanks protected, and B only one. B's unprotected flank is covered by troops in echellon to the rear, and with them the greater part of the cavalry. A dare not attack the standing right flank of B's line, because its attacking columns would themselves be exposed to flank attack from the troops in echellon. Neither can A by a flank march assume a new position

A′, for the purpose of turning the echellon, because

Fig. 9.

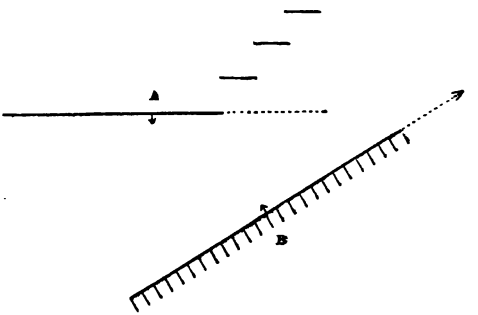


during the movement B might wheel up its left wing to attack the rear of A's line of flank march, and cut off A from any line of retreat leading to the rear of A's first position. Supposing that A were able safely to effect its change of position, such a change would still violate the rules of war (Principle 2.), unless it were provided with another line of retreat leading to the rear of the new position A′.

Some military writers have asserted that Frederick the Great introduced a new system of attack into the art of war, in what is called his oblique order. This is not the fact. His system was to attack one wing of his enemy's army with one of his own wings reinforced for that purpose at the expense of the other, remedying the weakness of his other wing by removing it beyond the reach of attack. He formed his line obliquely to that of the enemy, and then marched in the prolongation of his own line until he

outflanked the wing he designed to attack. In his order of march, Frederick particularly observed

Fig. 10.



Maxim 3. of this chapter. To effect his object of turning the flank opposed to him, he was obliged to make a flank march in presence of the enemy; but his order of march, always on such occasions in open column, enabled him to re-form his line of battle by a simple wheel of divisions into line. He trained his troops to march in this manner in two or more parallel columns with great accuracy, paying most particular attention to the preservation of proper lateral distances between the columns, and perpendicular distances between the divisions of the columns; so that his order of battle in two or more lines was formed in a moment. Fig. 10. shows an army, B, which has assumed a position oblique to that of A, marching in the prolongation of its line in open column to turn the left flank of A; it is evident that on account of

the direction of B's line, A may not be able to bring forward its right wing to make a counter attack on the rear of B's line of flank march before B attains its object of outflanking A. Attacked in such a manner, what course should the general of A adopt? If he has early detected the movements of his enemy, as he should have done if his outpost duty is properly performed, he may move his army to the threatened flank in the prolongation of his line, so as to outflank B's line of march, and so turn the tables. Frederick practised this at Rosbach. If B has had too much start to admit of this, he must then endeavour to form A in an order parallel to the threatened attack, by refusing the left, and advancing the right wing. Should time not admit of this, he must throw back as much of the left wing as possible into the required parallel order, and place a few battalions in echellon to the rear, taking every precaution to strengthen the elbow of the line which will be his weak point. The Austrians attempted this at Leuthen, but had not time. But the simplest and safest movement would be to retire by direct echellon from the left, which will oblige the enemy to outflank the echellon before he can attack, and this will give time for further dispositions.

The right wing of A may be rapidly advanced to make a counter attack on B's left flank while in march, and to seize on his line of retreat should his flank movement expose it. This movement must be

made methodically by direct echellon from the right; and the flank strongly supported by cavalry, otherwise the mass of the enemy's cavalry, which will be probably placed for the protection of his weak left wing, will defeat it.

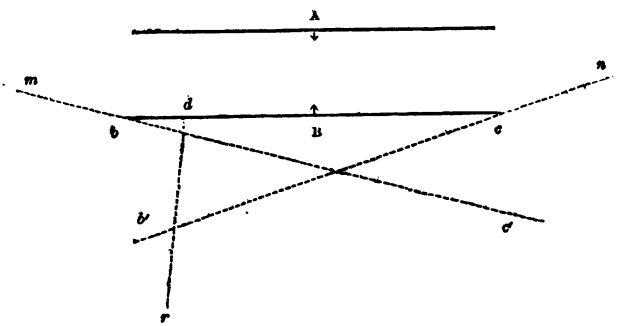
To take an oblique order with respect to an enemy is easy where you have not previously assumed a parallel order, and where the enemy's outposts are so negligent as to enable you to conceal your movements and neighbourhood from his knowledge until your object is attained, as happened to Frederick at Leuthen.

The case is different where one of two armies which are parallel to and in presence of each other attempts to take an oblique order with respect to the other. Napoleon says, "It is impossible for one of two parallel lines, each three miles long, and a mile asunder, to take an oblique order with regard to the other, so that one flank being approached to within 600 yards of the other line, the other flank shall be beyond the reach of attack; the army while marching to take the oblique order exposes its flank; if attacked, it will be beaten; while the wing threatened may be secured from danger by reinforcing it with the second line or the reserve."

When an army from the parallel order assumes the oblique order with respect to an enemy, the first consideration must be the line of retreat. The usual means of effecting the change is by keeping

one flank in its original position, and throwing back the other. If the army has but one line of commu-

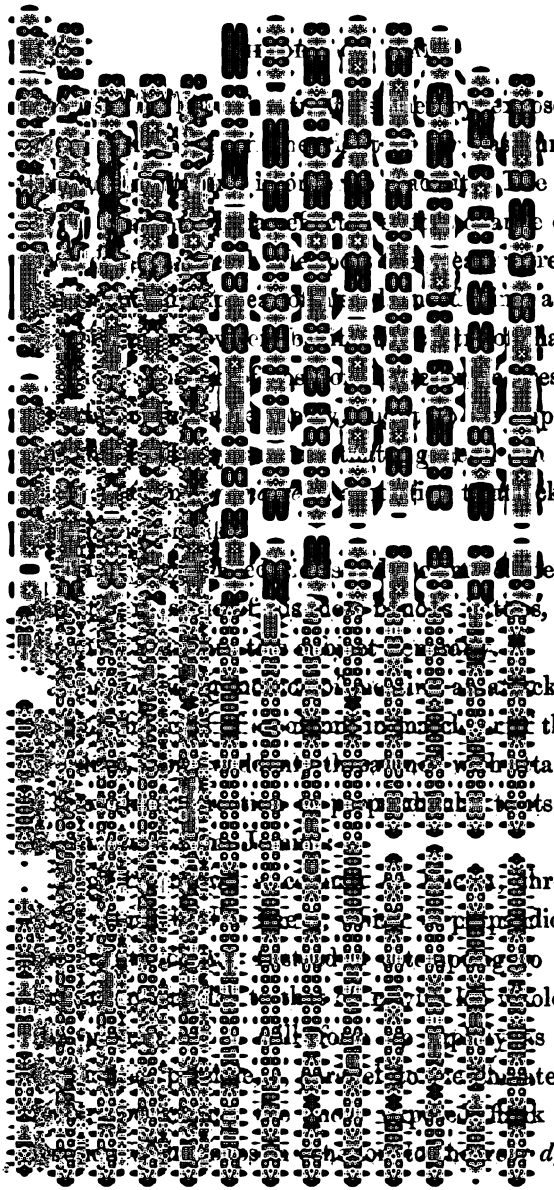
Fig. 11.



nication (or operation or retreat), it must always be in rear of the standing wing, otherwise it will be exposed to the enemy, more or less, according to the greater or smaller obliquity of the line.

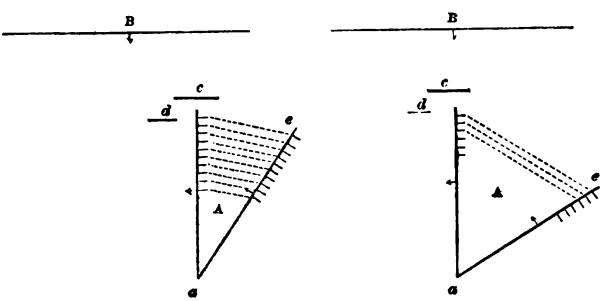
Fig. 11. shows two armies, A and B, in a parallel formation. B designs to assume the oblique order. Its line of retreat is *d r*, behind the left wing.* B may safely take the position *b c'*, and march towards *m*, because its line of retreat is completely covered thereby, and every part of B on the right of *d r* is nearer to its line of retreat than before. B cannot safely take the direction *b' c* and march towards *n*,

* It must be remembered that it is the general line of retreat or communication which is signified, and that it does not imply one road only, but embraces every road by which the several divisions of the army, being always in communication with each other, can reach its base. See definitions of single lines of operation.



same time that he forms the remainder obliquely in the direction *a e*. This change of direction may be easily effected by the flank march of divisions; and a new line be thus formed which not only covers the unprotected flank of *c*, but also menaces the flank of B. The fractions *c* and *d may* be sacrificed; but if time be gained by their resistance to effect the new formation, the army will have been saved from a worse evil.

Fig. 12.

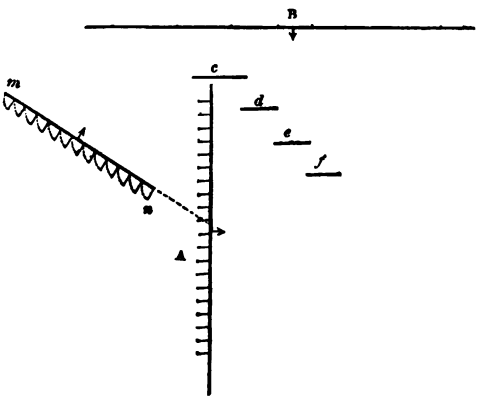


The difficulty of the above manœuvre will increase in proportion as the prolongation of A's original direction falls nearer to the centre of B; since the time required to effect the new formation will increase in the same ratio.

But probably a still better way of meeting such an attack as Fig. 12. illustrates would be to form up as before as large a fraction, *c*, as possible, in parallel order, and to dispose about one-third of the whole force in echellon to the rear at *d e f* (Fig. 13.);

while the remaining two-thirds move with all speed to the other flank of *c*, in the direction *m n*, to endeavour to outflank the army B. This movement

Fig. 13.



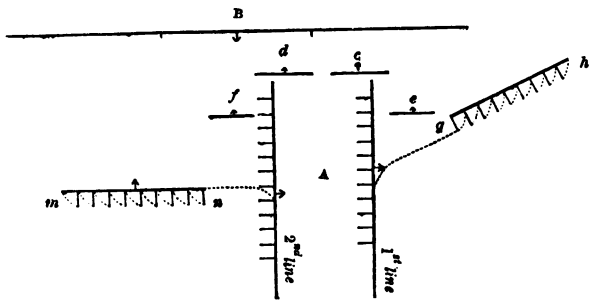
must be made in open column, so as to show a front to the enemy in a moment if necessary.

Supposing the two armies to be of equal strength, it will be seen that in the diagram the bodies of troops at *c d e f*, forming one-third of A, hold in check, by means of their echellon formation, about two-thirds of the enemy, while the remaining two-thirds of A are opposed to the remaining one-third of B. In all these cases the reasoning applies equally, whether A is in line or in one long column.

If two parallel columns of march, or lines, be substituted for one column or one line in the preceding examples, then the half of each column may be employed in forming a parallel front *c* and *d* (Fig. 14.),

and supporting them by one or more bodies, *e* and *f*, in echellon to the rear, while the other halves move

Fig. 14.



in open column, with all speed, to the flanks in the directions *g h* and *m n*.

It will be seen by the diagram that A's first line will be opposed to about one-third of B, while A's second line is opposed to two-thirds of B; the first line has taken the direction *g h*, because, on account of its superiority to the wing of the enemy immediately in its front, it will be able to outflank that wing. The second line has taken the direction *m n*, and placed itself in direct echellon, to remedy its inferiority to the troops immediately in front, and to prevent its being turned by those troops. It must be remarked, too, that on account of the direction of the march of the column of the first line, its natural front, when halted in *g h*, would be from the enemy,

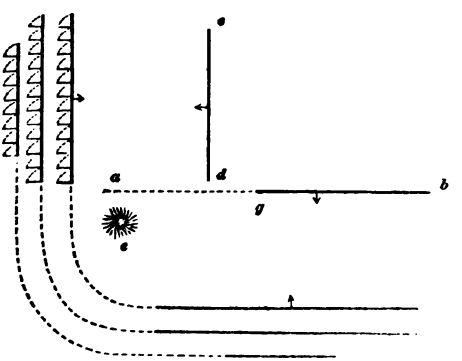
and in order to front the enemy line must be formed to the reverse flank.

The above examples are given for what they are worth; the nature of the country in which an army operates may render such movements impossible, but it is always good to exercise the invention on all cases which may arise.

Frederick the Great always employed the open column as his order of march in approaching an enemy, or when in his presence, for the purpose of turning his flank.

At the battle of Prague Frederick was opposed by Prince Charles. Let *a b*, Fig. 15., represent the

Fig. 15.



Austrian position on the range of hills commanding Prague. Frederick, whose army was drawn up on a range of hills facing *a b* in two lines, and a reserve in

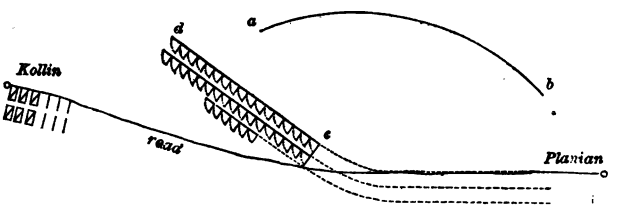
a third line, finding the front of the Austrians too strong, marched to turn their right flank in three parallel columns, each line forming one column, left in front with full distance between the divisions. This movement was effected with so much promptitude and precision that Jomini says one required to have seen the Prussian army manœuvre to form a just idea of it.

The head and the tail of each of the two right-hand columns were formed of cavalry. The reserve was all cavalry.

Prince Charles wheeled back his right wing to meet the threatened attack, and his army then occupied two sides of a square, *c d g b*, having an interval at the angle. Frederick was allowed leisurely to mass his whole force in front of one wing *c d*. He turned the flank *c*, penetrated likewise at *d*, and the Austrian army was defeated without the wing *g b* having been engaged at all. Prince Charles should have brought forward his left wing to attack the rear of Frederick's line of flank march. It will be observed, by referring to the description of the battle given elsewhere, that Prince Charles occupied some strong ground at *e*, from which he might have taken Frederick's attack on the wing *c d* in flank. But he allowed Frederick to possess himself of that decisive point, although he had the whole wing *g b* disengaged, with which to reinforce the defenders of the post *e*.

In the battle of Kollin, Frederick again marched along the front of the Austrian position to turn their right flank. His advanced guard, consisting of fifty-five squadrons and seven battalions under Ziethen, marched in two parallel columns, cavalry leading, one on the high road to Kollin, the other

Fig. 16.



on the left of that road. Its orders were to march to Kollin to attack a large body of the enemy's cavalry which was posted in front of that place, whose position there, if maintained, would have rendered impossible the attack which Frederick meditated on the flank *a* of the Austrian position *a b*, Fig. 16.

The main army followed in three parallel columns left in front. The right column marched on the high road, and was composed of the infantry of the first line; the infantry of the second line forming the next column marched on the left of that road. The third column was composed of all the remaining cavalry of the army, and was destined to oppose any attempts the enemy might make on the rear of the

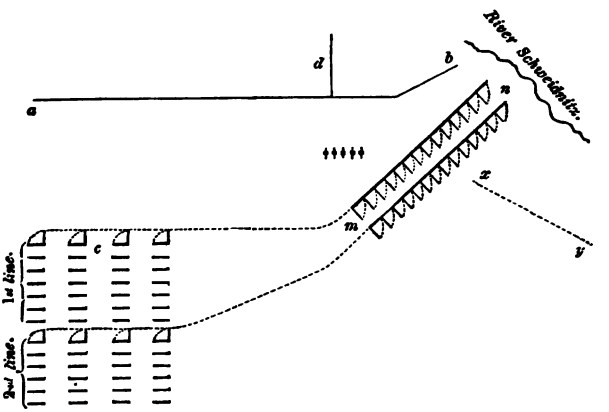
line of march. When the heads of the columns arrived at *c* opposite the Austrian right flank, they were to change their direction to *c d*, and form a line in *c d*, by the simple wheel of divisions, oblique to the direction of the enemy's right wing. By this disposition, the right flank being removed beyond the reach of attack, the left might be greatly reinforced for the decisive attack on the enemy's right wing. If the advanced guard succeeded in defeating the Austrian cavalry in front of Kollin, it was then to make a circuitous march to the right, and attack the Austrian right wing in reverse in co-operation with the infantry attack.

At the battle of Leuthen the Austrian army was drawn up in two lines, the left resting on the Schweidnitz river: *a b*, Fig. 17, represents the Austrian position.

Frederick approached the right of the Austrians perpendicularly in four parallel columns, right in front as shown in the diagram, the two flank columns composed of cavalry, the two centres of infantry; by this disposition each column was formed partly of the first, and partly of the second line. Thus the right or first column was composed of both the lines of cavalry of the right wing; the second, of both lines of infantry of the right wing; the third, of both lines of infantry of the left wing; the fourth, of both lines of cavalry of the left wing. The heavy

field artillery brought up the rear of the two centre columns.

Fig. 17.



The enemy was aware of the arrival of Frederick's army towards *c*, because the Prussian advanced guard, which has not been noticed, and consisted of 4800 infantry, all the light cavalry, and ten guns, attacked and drove in an Austrian detachment at the village of Borna, whose situation is represented by *c*; and the Austrian commander Daun, believing that his right was to be attacked, repaired himself to that wing with all his reserve to reinforce it. High ground which intervened between the two armies concealed the Prussian movements from the enemy, and Frederick, perceiving that the Austrian right was too strongly posted for attack, formed the project

of placing his army in a position oblique to the direction of the Austrian left wing. He accordingly ordered that when the heads of the columns arrived abreast of *c*, the leading divisions of both lines should wheel to the right, and so form two long parallel columns marching in the direction *m n*; the left column, or that nearest the enemy, composed of the first line; the right column, of the second line; both columns had cavalry leading and closing the march. The advanced guard formed a third column, but in advance of the main body, marching on high ground between the enemy and the Prussian first line. Frederick's movements being unmolested because the Austrians, having no advance posts along the front of their position, were ignorant of them, he succeeded in placing his army in the position *m n*, and in completely turning the Austrian left wing. Daun then endeavoured to form a front parallel to the attack by wheeling back about half of his left wing at right angles with its original front, as shown at *d*; but Frederick placed the ten guns of the advanced guard so as to enfilade the line so formed. The successive arrival of fresh troops on the Prussian right turned every new position of the Austrian left. Daun, seeing that all chance of restoring the battle on the left was lost, brought forward his right wing to make a counter attack on the Prussian left; but on account of the obliquity of

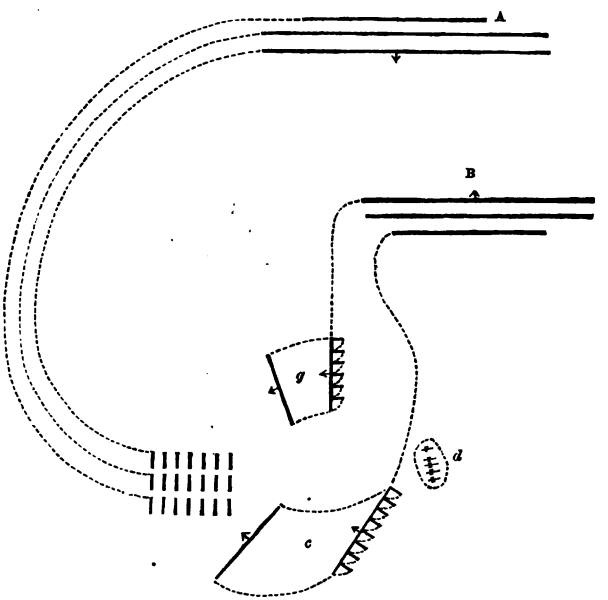
the Prussian line, its left was so far refused as to prevent the Austrians from reaching it in sufficient time for any success which they might obtain in that quarter to influence materially the fate of the battle, which was already lost on all other points; and all their attempts were defeated by the Prussian cavalry of the left wing. In this memorable battle the Austrian force amounted to upwards of 70,000 men — the Prussians had 33,000. If the Austrian outpost duty had been properly performed, the surprise of their left wing would have been impossible.

Frederick's flank movement to the right exposed entirely the line by which he had advanced (viz. from Neumarck on Borna); his movement would have been contrary to the rules of war, had he possessed no other available line of retreat. It was doubtless partly owing to the fact of Frederick's advance being perpendicular to the Austrian right wing, that Daun felt so secure for the safety of his left. He knew Frederick was very inferior in numbers, and that consequently he could not extend himself sufficiently far to his right to threaten Daun's left without completely abandoning his line of advance opposite the Austrian right. But in moving his army to the right, Frederick adopted the line of communication on Upper Silesia, which led in the direction $x\,y$.

At the battle of Rosbach, the Prince de Soubise commanding a confederate army, A, of French and Germans, amounting to 50,000 men, was opposed to 22,000 Prussians under Frederick.

The Prussian army, represented by B, Fig. 18,

Fig. 18.



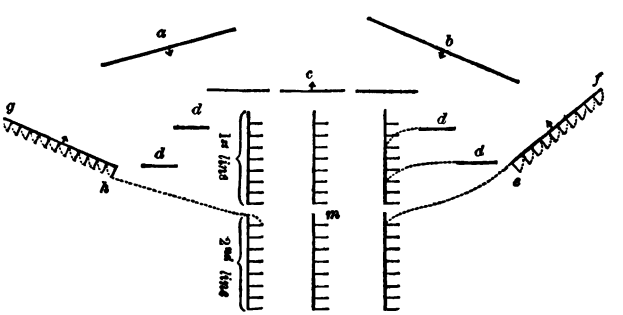
was drawn up in three lines, of which the cavalry formed the third. Soubise formed the project of marching round the left of the Prussians and attacking them in their left rear. His order of march, which was in imitation of Frederick's, was in three

parallel columns at open order, each line forming a column right in front, the whole of the cavalry at the head. Frederick, who watched the movement, as soon as their columns passed beyond the prolongation of his left flank, directed his cavalry to pass from the left by divisions to the rear, and, marching behind heights which concealed their movements from the enemy, to take up the position *c*, slightly oblique to the head of the Austrian columns of march; the guns which accompanied the cavalry were placed on the mamelon *d*, so as to enfilade the approaching columns. At the same time the infantry marched by lines from the left to the rear in open column for the purpose of forming their line in *g*. Six battalions only had formed in the required position when the head of the confederate columns appeared. Soubise, believing Frederick to be in full retreat, and wishing to intercept him, pushed forward his cavalry in haste beyond the reach of being supported by his infantry. Surprised by the sudden appearance of the formidable line of Prussian cavalry drawn up nearly at right angles to their line of march, the confederate cavalry attempted to deploy. Two regiments succeeded in forming a front; but charged by the Prussian line in a slightly oblique direction, and greatly outflanked, they were driven back upon the rest of the cavalry while it was attempting to open out in the same

manner, and the whole mass of cavalry was driven back upon the advancing infantry. The advancing columns of infantry then endeavoured to deploy; but being charged obliquely on the left by the six battalions posted at *g*, and on the right by the Prussian cavalry, they were thrown into irremediable confusion, and retired in disorder. In this action the Prussian force actually engaged amounted to forty-three squadrons and six battalions.

Soubise marched in three parallel columns. If their composition had been similar to that of Frederick's columns of march before Leuthen — that is to say, if the right column had been composed of the right of both his lines; the next of the centre of both lines; and the third of the left of both lines, as shown in Fig. 19; — the heads of the flank columns

Fig. 19.



of the second line might have changed their direction to *e f* and *g h* respectively, the right hand column

forming line in *e f* by a simple wheel into line, the left hand column forming line in *g h* to the reverse flank. The centre column, being right in front, might meanwhile have been forming line on its leading division and extending from *m* to behind *h*, while the gap between *m* and *e* might have been filled by troops of the first line.

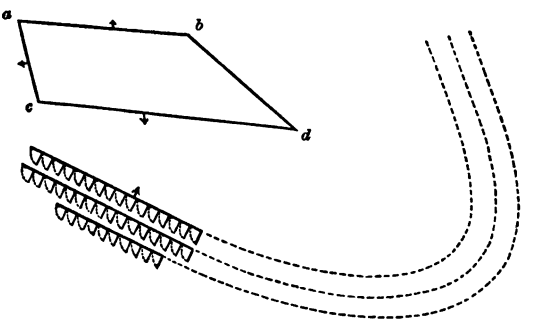
If in the meantime the troops at *a* and *b* had charged the heads of the columns and thrown them into confusion, the troops of the first line might have passed through intervals in the second line, and have formed up safely in rear, and the advance of the lines *g h* and *e f* would have taken the attacks *a* and *b* in flank. The greatly superior force of the columns to that of the bodies *a* and *b*, would justify the forward direction given to the two wings, by affording the certainty of being able to outflank those bodies. To throw forward the flanks without that certainty would be a grave error.

To meet the attack on the head, the columns should have formed up as large a front, *c*, as time would admit, covering its flanks by troops in echellon to the rear *d d*, who could readily take up the required position by wheeling out of the column to the right and left, in the same manner as the second line.

At the battle of Zorndorff, the Russians, commanded by General Fermor, were formed in a large

square, the cavalry and baggage in the centre, — a very faulty disposition, since it paralysed half of their force; but the Russians at that period were

Fig. 20.



o *Custrin.*

ignorant of the art of war, and adopted that order which they were accustomed to employ against the numerous cavalry of their traditional enemy the Turks. Frederick's line of march to attack is shown by the dotted lines, Fig. 20. His order of march was in three columns left in front, the two nearest the enemy being composed of the two lines of infantry, the third of all the cavalry except such as were with the advanced guard. The advanced guard itself formed a fourth column to the right of the first line of infantry. Frederick's first intention was to attack the short face *a c*, preferring to make a long circuitous march for this purpose to attacking the other short face *d b*, because the attack of *a c*

would open to him a safe retreat on Custrin in case of defeat. Finding, however, that the face *a c* was too well protected by a marshy valley, he determined to attack the right of the face *c d* in his favourite oblique order. The heads of his columns were attacked by the Russian cavalry and overthrown; the Russian infantry advanced to follow up the advantage, but, unskilful in manœuvring, it fell into confusion.

Frederick's cavalry, which came up to the support of his disordered columns of infantry, repulsed the Russian cavalry, and afterwards overthrew the advancing Russian infantry by a flank attack. Frederick's oblique order failed completely in this instance, because the Russians were prepared for him and took the initiative — he was obliged to make an attack on the left flank of *c d*: the victory remained to him far more by reason of the superiority of his troops, particularly the cavalry, than because of his skill in handling them; by all the rules of war, he ought to have been defeated. The battle was decided by hard hand-to-hand fighting.

From the above examples we may conclude —

1st. That in order to attempt successfully the oblique order by a flank march in the neighbourhood of an enemy, the march of the army must be concealed from the enemy.

2nd. The line of retreat of the army which takes

the oblique order, must always be in rear of the advanced wing.

3rd. That the greater the obliquity of the army to the enemy's line, the greater the security of the refused flank from counter-attack, and the greater the probability of success. And this only brings us to the perfection of flank attack, which is when the direction of the army is perpendicular to that of the enemy, as has been already demonstrated in the remarks on Maxim 4 of this chapter.

Frederick's famous oblique order therefore is nothing but a particular application of Maxim 19, in which there is nothing new. All generals have observed it. But his orders of march are well worthy of careful study and imitation.

If an enemy endeavours to turn one of your flanks by moving his whole army to that flank, there are several modes of defeating his intention.

1st. If he marches in such an order that he cannot readily resume his line of battle facing your army, make a vigorous attack on the flank of his march along his whole line.

2nd. If he marches as above in loose order, so as to leave any large interval between the different divisions of his army, attack one of the separated portions, suppose the rear portion, by interposing a body of troops between it and the rest of the army to stop the head of its march while you direct other

troops against the flank of its march. If the leading portion be selected for attack, practise Wellington's manœuvre at the battle of Salamanca.

3rd. If he marches compactly, and in such an order as will enable him to re-form his line in a moment, you must choose the head or the rear of his line of march for attack; but the attack must be made with method, and supported by cavalry, or the enemy's cavalry (which will be found at both those points) will take your infantry in flank.

4th. You may prolong your line to the threatened flank by either of the methods given at the commencement of this chapter, and turn the tables on the enemy by outflanking him.

The limits of this work do not admit of this subject being extended further. The effective force of an army in battle depends chiefly on the rapidity and precision with which it can manœuvre; and the basis of its excellence in this particular is found in the proficiency of each battalion and squadron in field movements. The effective force of an army in a campaign depends mainly on the regularity and rapidity with which its marches are conducted; and as the success of an action may often be influenced by the order of march in which an army approaches an enemy in position, it is impossible that the troops can be too much practised in every possible order of march.

There cannot be a better exercise for a student than to read and consider attentively the orders issued by the Quartermaster-General's department during the Peninsular war. In them will be found the orders of march of the different divisions of the army, and the combinations for their concentration at the required spot. But good maps are indispensable to the study of this subject, as they are to that of the history of all military operations.

This chapter will be concluded by the following piece of advice, given by Marshal Canrobert to a friend of the author. It is as follows:—

"An officer charged with the arrangement of any military movement or operation, should on no account trust to the intelligence of subordinates who are to execute them. He should anticipate and provide against every misconception or stupidity it is possible to foresee, and give all the minute directions he would think necessary if he knew the officer charged with the execution of the operation to be the most stupid of mankind."

The Marshal illustrated the above maxim by the following anecdote of the Bourgeois de Falaise. That individual, it seems, was in the habit of going out o' nights; and, when dark, he met with many grievous disasters, in the shape of bruised shins and broken noses. A friend, wiser than himself, told him that when he went out on dark nights, he ought

to take a lantern with him. He accordingly provided himself with a lantern for his next nocturnal expedition; but finding matters not improved, he complained to his friend that he had followed his advice without thereby deriving any benefit. "Had you a candle in the lantern?" said his friend. "No," said the Bourgeois; "you never told me to take a candle." "Oh! but," said his friend, "when you go out on dark nights, you must not only take a lantern, but you must put a candle in it." That evening the Bourgeois took a lantern and candle, but returned next morning to complain that he got on no better than before. "Did you light the candle?" said his friend. "No; you did not tell me to light the candle," was the reply. "Oh," said his friend, "but when you go out on dark nights, you must not only take a lantern, but you must put a candle in it, and you must moreover light that candle." Accordingly, the worthy man departed, but again made his appearance the next day, complaining that he had strictly obeyed all his friend's injunctions, but that the wind had blown out his light! "Oh," said his friend, "but when you go out on dark nights, you must not only take a lantern, and put a candle in it, and light that candle, but you must also shut the door of the lantern!"

CHAP. VIII.

TO YOUNG OFFICERS.

"Le vray caractère d'un parfait homme de guerre doit estre la crainte du Dieu, l'amour du souverain, le respect des lois, la préférence de l'honneur aux plaisirs et à la vie même." *

AN officer generally joins the army at a very early age. He is frequently transferred direct from the discipline of a school to the liberty of a barrack-room; and he is consequently exposed to many temptations to fall into a life of idleness and folly, which he will do well to prepare himself to resist. The whole of his future career may be influenced by the manner in which he spends the first few months of his military life. It has been too much the fashion for commanding officers not to trouble themselves about the proceedings of their officers provided they are regular in their military duties. This fashion is much to be deplored; for many a young man might have been saved from ruin by the timely and energetic interference of his superiors. The commanding officer of a regiment is in the position of the father of a family; and it is his bounden duty to watch

* From an old French Army List.

over the moral as well as the military conduct of those under his command.

If a youth join the army with a true military spirit, he will feel that the command of the men who have fought and suffered with unsurpassed bravery and fortitude, is an honourable trust, to make himself worthy of which should be his constant aim. He will stir up his ambition to be something more than a peg on which to hang a red coat. He will devote all his attention to learning his duties, and will conscientiously perform them when learnt.

1st. *Drill.*—This must not be acquired mechanically, but intelligently. The "reason why" of everything should be puzzled out. Many young gentlemen go through it as an irksome task, the fulfilment of which will set them free from the "horrid nuisance" of those three daily parades. When dismissed drill, it must not be supposed that everything is, but that everything is to be, learnt. The young officer should study the manœuvres in the drill-book, and practise himself in his own room, with wooden divisions, in all the movements of the company and battalion, until he masters both thoroughly. He must not be satisfied, however, with being able to move bodies of men in the various formations laid down by regulation; but he must study the advantages of each formation, and know under what circumstances one is better than another, and why.

2nd. All the details of the management and interior economy of his company should be thoroughly learnt by the young soldier, comprising arms, clothing, food, payment, punishments, rewards, &c., after which a knowledge of the management of a regiment will be easily acquired.

3rd. Orderly duty should be done conscientiously and with interest. A gentleman should consider it to be as disgraceful to sign his name at the bottom of a report of which the items are not strictly true, as to tell a deliberate falsehood. *Every day on which an officer has performed his duty negligently he has morally obtained money* (viz. his pay for that day) *under false pretences.*

4th. To command men worthily it is not sufficient to hold the Queen's commission in one's writing-desk. An officer should acquire such influence over his men that they will be eager to do his bidding and to follow him anywhere. The possession of that influence is the peculiar mark of a good officer; and it cannot be acquired without a knowledge of the names of the soldiers and the study of their individual characters. Some officers never even learn the names of the men of their own companies, much less study their dispositions. A knowledge of character, however, is indispensable to the proper management of men. If two men were framed like two locomotives, of precisely the same number of pistons and cranks urged by

the same amount of steam, the same management might do for both; but since that is not the case, the same treatment will have a very different effect on different characters. In dealing with men, therefore, knowledge of human nature as well as discretion and temper are required. Some officers, from their peculiar temperament, work themselves up into a passion when ordering a punishment. An officer should never allow a soldier to think that he is punishing an offence against himself personally. Mildness of manner is quite compatible with inflexibility of action, and produces a far greater effect than violence in combination with it.

Officers should be most scrupulous in *ceremoniously* returning all salutes; their failing to do so is almost as great a military offence as the neglect to salute would be in a private soldier; it is moreover an offence against good taste and breeding. A soldier will be more likely to respect himself when he sees that his officer respects him.

5th. *Life in quarters.* — The opportunity afforded by the leisure of peace should be employed in preparation for the natural condition of the soldier, which is active service. The young officer in a garrison is sorely tempted to a life of dissipation and idleness. Habits of employment acquired at an earlier period are invaluable in aid of good resolutions to withstand such temptations. But the

recruit who is really desirous of becoming a soldier has much to learn. As the basis of all military studies, he should make himself thoroughly acquainted with the principles of war, which are easily learnt and understood. From a want of this knowledge, many men go groping on in their profession in the dark; and there are many instances of officers having been thirty years in the service without their minds having ever opened to understand intelligently what they have been doing every day. Having first mastered the principles, let the student then proceed to details. There is no detail, however trifling, of military service, from the defence of a house, village, or outpost, to that of a city or a position, to which those principles do not apply; and the details will be more interesting and consequently more easily acquired, when referred intelligently to general rules previously understood. The student is referred to that most valuable work "Jervis' Manual of Field Operations" for full details of military service in the field. An officer may teach himself the theory of field fortification by carefully reading Jebb's amusing treatise; and in all probability facilities will be afforded for becoming acquainted with the practical part also.

The young officer should learn to survey. Let him buy a prismatic compass and set to work. There is

not a regiment in the army in which he will not find some officer able and willing to help him.*

He may employ half his time in reading standard military histories, beginning with "Napier;" but it will be comparatively useless to do so unless he has the principles of the art of war previously well fixed in his mind.

A recruit who employs his time as above indicated will become a good soldier, and capable, if he ever has the opportunity, of doing service to his country; but anything is better than listless idleness, which is driven to have recourse to one cigar after another as a resource and an excitement.

It is the bounden duty of all officers to set a good example to their men, not only as regards general military discipline, but as regards morality and sobriety of conduct, including regular attendance at church and devotion while there, avoidance of debt, and of everything in their habits which may create scandal.

Practical joking cannot for one moment be tolerated among gentlemen. Always foolish and beneath the dignity of a man, it is frequently malignant

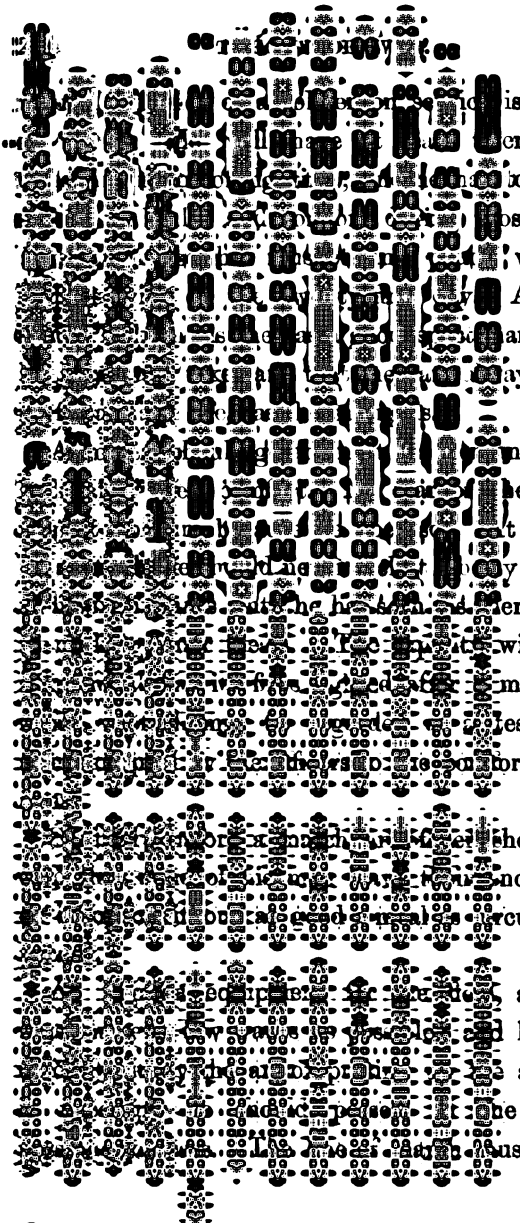
* It would be beneficial to the army, if with every regiment there were a "captain-instructor" competent to teach the different branches of military science.

A good library of standard military works is an indispensable accompaniment to a regiment in time of peace.

and hurtful. It is inconceivable that any youth who has been brought up as a gentleman should see any amusement or wit in destroying the property of a brother officer, — a proceeding which is one of the practices of this senseless system. Whatever may be the nature of a practical joke, it almost always leads to quarrels, sometimes to death; and it is certain that no commanding officer is fit for the position he holds, if he does not instantly put a stop to the habit of such joking in his regiment when he knows it to exist. If such a habit should exist in his regiment without his knowledge, he is equally unfit for his command.

6th. When an officer is on active service in the field, everything connected with the daily life of his men should be an object of constant attention; no detail is beneath him. He must not think the arms and ammunition his most important charge, and that if they be in fighting order he need not trouble himself much about the rest.

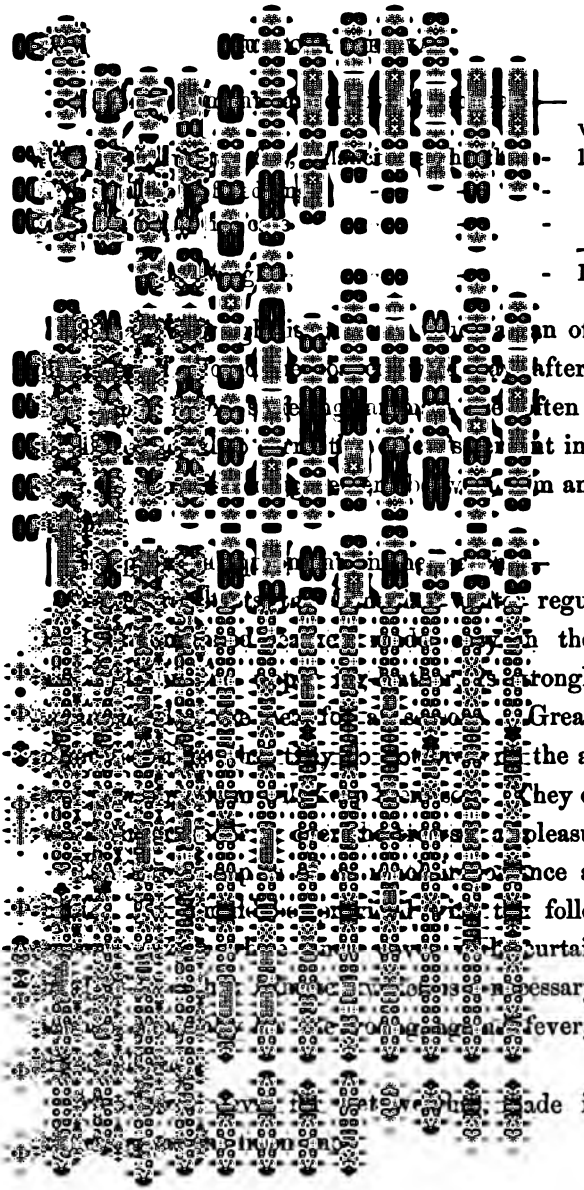
The arms are the fighting weapons, but the soldier is the machine which wields them; and it is to him—to clothing his back and feeding his belly and looking after his health and comfort—that the great attention is due. The arms and ammunition must of course be always in perfect order, but they are only required when in contact with an enemy. The



sidered as the natural condition of a soldier, and everything regulated with that view. The baggage of a subaltern should never exceed 200 lbs. weight. Two bullock trunks (or portmanteaus of the same capacity, which are somewhat lighter) should hold all his possessions — one for his clothes and books, the other for his bed-frame, blankets * and canteen, &c. The canteen fitted for one only, may be reduced within very small compass, packed within a small cylindrical camp kettle with a strong handle, and the whole fitted into an outer case of leather lined with zinc, furnished with a top which serves as a basin, while the lower part forms a bucket. The dimensions of the canteen and case would be about one foot high, and eight inches in diameter.

In addition to the above, if he wishes to be luxurious, he may have a small thin mattress and pillow rolled in a tarpaulin camp blanket. An india-rubber bucket, which can be packed in the mattress, and a medium-sized axe in leather case to hang to the pack saddle, are indispensable. An india-rubber square bath, which can be strapped on to the top of that portmanteau which is lightest when packed, completes his equipment.

* One of the blankets should be waterproof, like those used by the French soldiers. They are not absolutely waterproof, but they turn the rain for a long time: they are made of a light woollen fibre.



Weight.
140 lbs.
20
7
167 lbs.

For cold weather, the addition of ear-covers made of cloth lined with flannel, is all that is required. The writer has passed ten years in Canada, and is certain that fur caps keep the head too hot in any weather, however cold, and that they are therefore injurious to health.

The grey flannel shirt is the best for all seasons; and a flannel cholera bandage should be always worn, winter and summer.

On the march, an officer should carry his light waterproof blanket, rolled like a large sausage, having inside of it a pair of socks, brush and comb, and a pair of light shoes; he is then independent. His cloak may take the place of the blanket in his portmanteau.

In addition to the above, he carries his havresack, with provisions for the day or more, according to circumstances, a water bottle, in most cases a revolver; and he should be provided with a small good telescope: the double glasses are useless toys.

When the young officer has made a long march with the above load in hot weather, he will be able to judge of the labour a private soldier endures in carrying a weight far greater; and he may be induced to turn his attention to the subject of diminishing the soldier's burden to the least possible weight consistent with efficiency.

Lastly, it is very much to be desired that all officers

should keep a sort of diary, in which every circumstance worthy of being remembered in a military point of view should be briefly noted, particularly all remarkable features of country, and all the information respecting the different halting places as regards water, fuel, and the nature of the ground, which would be useful to remember in the event of the army being again in the same neighbourhood. Such notes may be useful even after the lapse of years.

7th. A habit has crept into the army which, whether in quarters or the field, cannot fail to be injurious to its discipline, and on which a few words may properly be said here.

No amount of disapprobation of his general's plans can justify an officer in canvassing those plans with others and openly finding fault with them. A great many young gentlemen (and old gentlemen too for that matter) set up for generals, and habitually ridicule the dispositions of their superiors. Such a practice is insubordinate and mischievous in the highest degree; the soldiers acquire the habit from those whose duty it is to set an example; they lose that confidence in their general which is one of the principal elements of success in military operations, and infinite mischief results.

If officers disapprove, let them do so in secret; the chances are not small that the general is a better

judge of what is fitting than they; for he must be acquainted with many facts of which they are ignorant, without a knowledge of which a correct judgment cannot be formed.

The practice of writing in newspapers; making anonymous reflections on the character, military or otherwise, of their brother officers;—or finding fault with the measures of those placed in authority above them;—is another which is much to be deplored. It is unmanly, and strikes at the root of all discipline and good feeling.

This chapter may fitly be concluded by quotations from Livy's description of the famous Greek general Philopœmen, and from the maxims of Napoleon.

"Philopœmen was a man of great skill and practice in conducting a march and in occupying ground; and to this, as well as to everything connected with the military art, he had directed his attention *not only in war but also in peace.*

"When, during a march, he came to a difficult defile, he would examine the ground on all sides; if alone, he would meditate on the subject; if attended by his staff, he would inquire of them what plans they would suggest in case an enemy should attack them in front, on either flank, or in the rear.

* * * * * *

"By inquiry and reflection, he determined on the ground he should choose for his camp; how

large a space he should surround with a rampart; what advantages there were for obtaining water, forage, and wood; where on the next day he could march on striking his camp with the greatest advantage; and what order of march he should adopt, &c.

"*From his youth he had so occupied his mind with cares and deliberations of this nature, that on such subjects no device was new to him.*"

A perfect knowledge of the correct application of the principles of war in theory may easily be acquired by all officers of average intellect; their correct application in practice, before an enemy, belongs to a great commander alone.

But no man, whatever may be his natural genius for war, can hope to become a general without arduous study; in support of which, the following maxim of the great Napoleon is here given: —

"Lisez, relisez les campagnes d'Alexandre, Annibal, César, Gustave, Turenne, Eugène et de Frédéric; modelez-vous sur eux; voilà le seul moyen de devenir grand capitaine, et de surprendre les secrets de l'art de la guerre. Votre génie, éclairé par cette étude, vous fera rejeter les maximes opposées à celles de ces grands hommes."

EXAMPLES OF BATTLES TO ILLUSTRATE THE FOREGOING CHAPTERS.

Battle of Lowositz.

As has already been related in the sketch of the campaign of 1756, Marshal Braun, at the head of the Austrian army, 40,000 strong, advanced from Kollin and crossed the Eger at Budyn, with the design of relieving the Saxon army which was blockaded by Frederick in the camp at Pirna.

On the 30th of September, Frederick quitted his camp at Aussig, and advanced to meet Braun; on the same evening as he approached the village of Lowositz he observed the Austrian army in position. (See Plate V.)

Austrian Position.

The right rested on the Elbe behind Lowositz; the front was covered by a marshy stream; the left was beyond the village of Sulowitz. The position was about 5000 yards in length.

Frederick perceiving that the enemy had failed to occupy the heights of Lobosch and Radostitz, and sensible of their great importance, pressed forward

at once with his advanced guard to take possession of them, without waiting for his main body; he was therefore obliged to content himself with placing 4 battalions in the valley between the two mountains, and 4 other battalions near the village of Woparna to watch another valley which extends to the Elbe behind Lobosch, by which an enterprising enemy might attempt to surprise him. In the course of the night, the Prussian main body having come up, Frederick ordered the Prince de Bevern to occupy Lobosch with the left, while Prince Henry with the right occupied the heights of Radostitz.

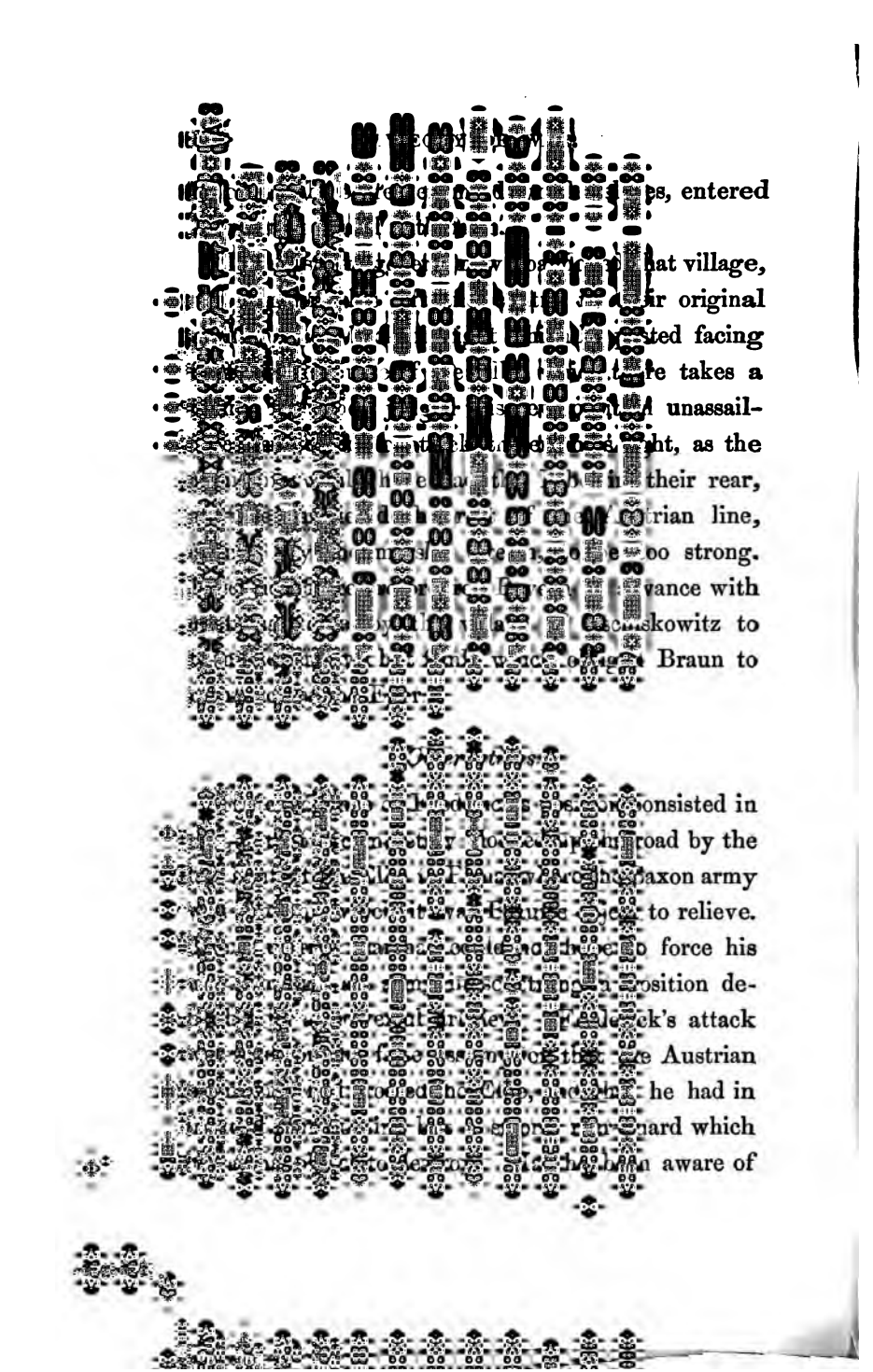
Frederick could not believe it possible that the Austrian general would have neglected to occupy those important heights had it been his intention to march by the left bank of the Elbe to the relief of the Saxon army; he therefore concluded that the Austrian army had passed over to the right bank, and that a body of Austrian cavalry, and some light troops posted in the plain between Lowositz and the Prussian position, whom he descried through the obscurity of a very foggy morning, were only a rear-guard. Frederick, on this supposition, formed the plan of wheeling his own line forward on the left as a pivot, and of thereby enclosing the supposed Austrian rear-guard between his army and the Elbe.

Frederick's position being rather too extensive for his numbers, his infantry occupied it in one line

only. The Prussian cavalry were drawn up in three lines in rear, between the two mountains.

Frederick commenced the battle by ordering the cavalry to pass through intervals in the line of infantry, and to charge the Austrian cavalry in the plain; the effect of which was, that the Austrian cavalry was driven back to Lowositz, where it reformed under the protection of the fire of the infantry who occupied that village in force. The Prussian cavalry retired in its turn pursued by the Austrians, but a second charge completely routed the Austrian cavalry which was pursued by the Prussians up to the muzzles of the Austrian infantry. The Austrian light cavalry now attacked the victorious Prussian squadrons, broken up as they were by the charge and pursuit, in flank, and would have inflicted a serious loss upon them but for the opportune aid of the Prussian reserve; but the heavy fire of artillery and musketry, and the arrival of fresh Austrian squadrons, not only compelled his cavalry to retire, but convinced Frederick that he had to do with the whole Austrian army instead of a rear-guard. At the same moment the fog cleared away.

Marshal Braun, now fully sensible of his fault in neglecting to seize the heights in his front, made a vigorous attack on the hill of Lobosch, which was repulsed with great loss, and the Prussian infantry,



the real state of the case, he would have awaited the Austrian attack, which probably never would have been made. Frederick's object would have been accomplished by maintaining his position; he would have been wrong with an inferior force to throw away the advantage of his strong ground to attack where the enemy had all the advantage of ground, merely for the purpose of forcing him to retire.

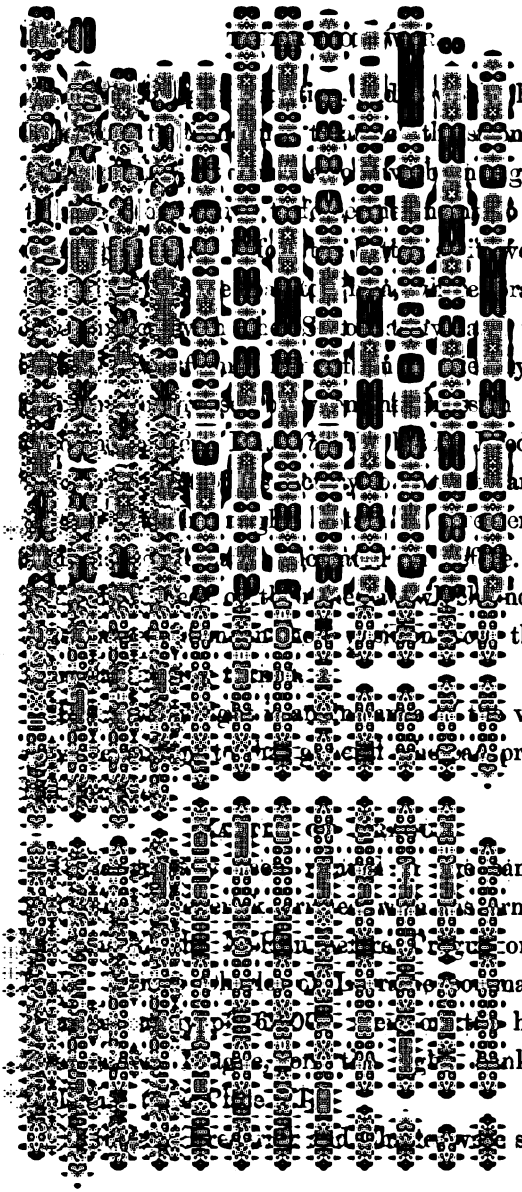
The Prussian position united in its favour Maxims 11. 12. 16. and 17.

In their order of battle, the Austrians violated Maxim 19. (see the concluding remark of that maxim), since they paralysed the greater part of their force by shutting it up behind the marshy stream, whence it could not conveniently be brought into action.

Frederick was in consequence enabled to bring the greater part of his force to bear against the village of Lowositz, which was the decisive point of this field of battle.

Frederick applied Maxim 25. for the purpose of dislodging the enemy from his second position. It may be thought that the above reasoning should apply equally to the Austrian second position as to the first, and that Frederick should have been satisfied with holding his ground; but those who argue thus betray great ignorance of war.

In the first case Frederick's object was secured by



have been
ng position
grave error
retire by
would have
raun would
where he
y country
army and
derick had
and rightly
er success
e. It was
nduced the
the fear of

victory al-
produce the

ampaign of
army on the
on the 2nd
manded the
heights of
bank of the

still in the

same positions. Schwerin, commanding a Prussian corps, was at Bunzlau, on the right bank of the Elbe opposite Brandeis; and the Austrian general Daun was *en route* from Moravia by the road of Kollin to reinforce Prince Charles.

On the 5th Schwerin crossed to the left bank of the Elbe, and advanced from Brandeis to unite with Frederick.

The same day Frederick threw a bridge across the Moldau at Podhaba and crossed to the right bank, unmolested by the Austrians, although within 4000 yards of their camp. And on the morning of the 6th he united Schwerin's force to his own at the village of Prositz.

Austrian Position.—The left occupied the heights of Zisca; the right, the hills which overlook the village of Kyge; the front was covered by a stream whose banks were marshy, which has its source in the pond of Sterboholzy, runs round the Austrian right and front by the villages of Sterboholzy, Potscherwitz, Hostawitz, and Kyge, and falls into the Moldau halfway between Podhaba and Prague. The heights occupied by the Austrians are on the left high and steep, but begin to lower near Kyge, and thence falling, they lose themselves in the plain of Sterboholzy, which is favourable for the action of cavalry.

Prussian Position. — Right, at village of Prositz; centre, in front of Gibel; 1 ft, beyond Sattalitze.

The Prussians also occupied a chain of heights parallel to those of the Austrians, and distant from them about 2½ miles.

The two armies were about equal in numbers, but Frederick's army was superior in all else.

From the nature of the ground between the heights occupied by the two armies, and of the stream which covered the Austrian front, Frederick judged that an attack in front would fail; he therefore sent Marshal Schwerin at a gallop to see if it was possible to turn the enemy's right flank. Schwerin returned with the information that the Austrian right did not reach so far as Sterboholzy, and that it was *en l'air*; Frederick accordingly carried his army to the left to turn the Austrian right flank. Prince Charles to meet this threw back the whole of his right wing, so that his new position was as follows (shown at AA in Plate VI.): —

The right, on the heights which overlook the plain of Sterboholzy; the centre, overlooking Kyge; and the left, as before, on the heights of Zisca; the Austrian order of battle was thus two sides of a square, each being about 7000 yards long; the cavalry on the extreme right in the plain (shown at A′ in the Plate).

As soon as the right of the king had reached Kyge he halted; his front extended from Kyge on the right to beyond Sterboholzy on the left. This

movement uncovered his line of retreat, which was on Brandeis, and placed his army *à cheval* on the road to Kollin, by which General Daun was advancing with 30,000 Austrians.

The Austrian infantry occupied, beyond the stream which covered their front, commanding ground (marked x in the Plate) which overlooked the village of Gibel, about a mile from the angle of the square. As from this post they could have taken the Prussian line in flank while advancing to attack, Frederick ordered it to be attacked and carried, at the same time that Schwerin with the left wing passed the rivulet at Sterboholzy and Podschernitz where the ground was very difficult, the cavalry by the causeways, the infantry up to their knees in the marsh. Schwerin attacked the position of the Austrian right wing, but was repulsed and pursued by the enemy for more than a mile. The Prussian cavalry of the left wing, 65 squadrons, meanwhile succeeded in entering the plain of Sterboholzy, which the Austrian cavalry allowed them to do without molestation, although it consisted of 104 squadrons drawn up opposite the causeway over the marsh by which the Prussians had to advance into the plain. The Prussian commander, perceiving the great superiority of the enemy and the risk he ran of being outflanked, charged him at once impetuously, and overthrew the Austrian first line; but this attack uncovered his flanks, the Austrians

outflanked him, and, their second line charging at the same instant, he was repulsed.

General Ziethen now brought several regiments from the right wing to reinforce the Prussian cavalry on the left; and eventually the Austrian cavalry was broken and driven off the field.

The Austrian right wing became thus completely uncovered at the very time when Frederick himself attacked the angle of their square. The Austrians had left a sufficiently large interval at this angle to permit the Prince de Bevern to penetrate there.

Schwerin having rallied the Prussian left wing, led it to a second attack. The Austrian right wing, attacked on the right flank by the cavalry, on the left flank by Bevern, and in front by Schwerin, fled in disorder.

The Austrian general covered its retreat as far as possible by his left wing, which had not been engaged; but, constantly outflanked on his right by the forward movement of the victorious Prussians, 12,000 men were cut off from Prague and succeeded with difficulty in reaching the camp of Genera Daun, who had arrived during the battle at Böhmisch Brodt. The Austrian loss was 16,000 men and 100 guns. The Prussian loss 12,000 men.

Observations.

Prince Charles deserved his defeat. He allowed

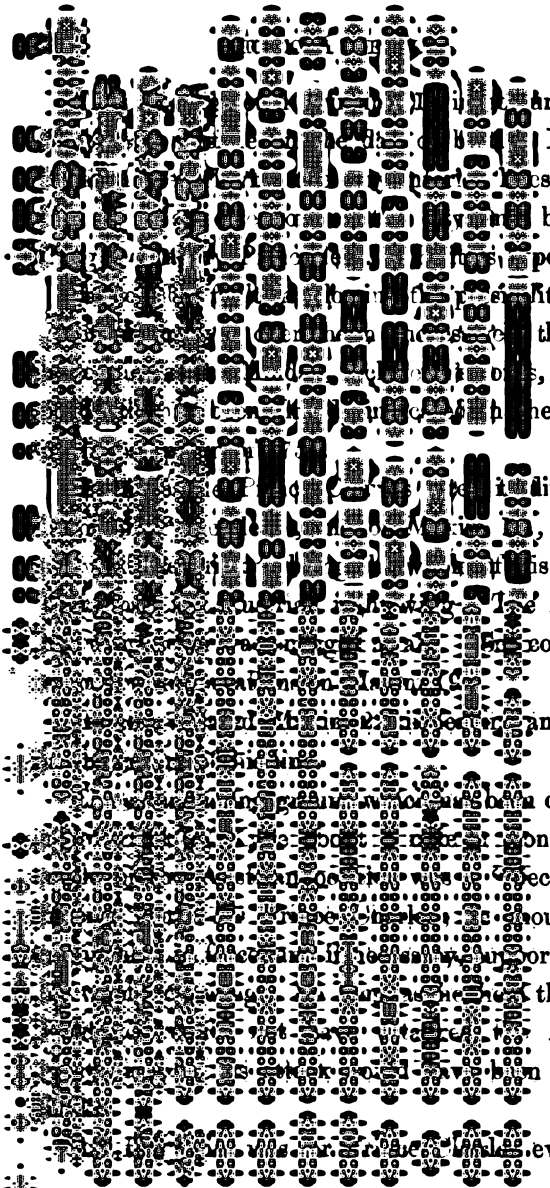
Frederick to cross a great river within 4000 yards of the Austrian position without molestation, although he knew Frederick's object was to unite with Schwerin's army, and to attack him. (See Maxims 3. and 6.)

After Frederick had crossed at Podhaba, Prince Charles allowed him to march to Prositz exposing his flank, without attack. (Maxim 24.)

Prince Charles occupied a commanding position on heights of difficult approach, supported by a fortress. General Daun was on the day of the battle two short marches distant. The reinforcements that general brought would have given the Prince a superiority of 30,000 men on the field of battle. It was clearly his interest, therefore, to defer an engagement till his arrival, instead of accepting a battle at the very moment which suited his opponent.

He should have concentrated his army round Prague, and held himself ready, as soon as Frederick had advanced from Podhaba, to traverse the town and crush the corps of Marshal Keith which was isolated on the left bank, having previously destroyed the King's bridge at Podhaba.

This done, he could have resumed his position on the heights on the right bank; and if Frederick united with Schwerin showed a disposition to advance against Daun, Prince Charles could have acted on his rear.



decisive for offence; because, had he made this a pivot on which to wheel forward his whole left wing, that wing would have been formed at right angles to Frederick's line. Frederick had already abandoned his only line of retreat when he passed Kyge; and his defeat would almost have been certain.

BATTLE OF KOLLIN, 18*th June*, 1757.

On learning the defeat of Prince Charles at Prague, Daun retired with his force from Böhmisch Brodt to beyond Kollin. The Prince de Bevern was sent with 25,000 men to observe him, while Frederick continued the siege of Prague. Daun having been reinforced, advanced on the 12th June against Bevern, who retired in his turn to unite with Frederick, who was approaching with a reinforcement from Prague.

On the evening of the 17th June, Frederick took up a position *à cheval* on the road leading from Prague to Kollin, having before him the village of Planian and, nine miles further on, Kollin.

On the 17th of June also Daun was in position, the right at Chotzemitz, the centre on the heights of Kirchenau, the left at Swoyschitz.

By marching on the road which led from Planian to Kollin, Frederick would have turned his adversary's right flank. Frederick accordingly marched at daybreak on the 18th with that design, but found that

Daun, sensible of the danger, had changed his ground during the night, and was posted as follows (see Plate VII.):—

The Austrian position was on a curved range of hills, concave towards the road from Planian to Kollin. That road may be considered as the chord of the arc which was marked by the Austrian line of battle. The right was at Krezor, the centre at Chotzemitz, the left at Brezau. The line extended behind those villages, which were strongly entrenched, occupied by infantry, and defended by the guns of the position. The ground in the neighbourhood of the villages was covered with high standing corn, which afforded good cover to the Austrian light troops.

About 1200 yards in echellon to the rear of Krezor was the village of Radowenitz, which was occupied by infantry; and the space between these two villages was filled by a large wood, which was strongly defended by infantry and artillery.

At the moment when Frederick first became aware of this new disposition of the Austrian army, his advanced guard had reached Slatislanz, and his main body was between Nowomiesto and Planian. The relative position of the two armies was such that the Prussians outflanked the whole of the enemy's left.

Nevertheless, instead of attacking that wing,

Frederick determined to carry his army from right to left to attack the Austrian right flank, to do which he was obliged to pass along the whole front of the Austrian position, exposed to its artillery fire and to the galling musketry fire of the light troops which covered its front.

Frederick ordered Ziethen with fifty-five squadrons of the advanced guard to march against the mass of the Austrian cavalry, which was posted in front of Kollin, and whose position there, if maintained, would have rendered impossible the attack which Frederick meditated on the Austrian right wing. General Hulsen with the infantry of the advanced guard was ordered to diverge from the road to attack Krezor as soon as it should arrive opposite to that village, and so to cover the Prussian main body in its movement to outflank the Austrian right.

The Prussian main body was ordered to quit the road as soon as it passed Slatislanz, and to take the direction M N, as shown in the Plate.

If the attack of Ziethen on the Austrian cavalry in front of Kollin should succeed, he was in that case to make a detour to his right, and to attack the Austrian right wing in reverse, while the main body attacked it in flank.

Frederick's main body marched in three columns; the right column, consisting of the infantry of the

first line, marched on the road from Planian to Kollin; the second, composed of the infantry of the second line, and the third column consisting of the remainder of the cavalry, marched on the left of that road.

To execute properly Frederick's plan, it was necessary that the different sections of each column marching left in front, should accurately preserve their distances from each other, and that the line of battle should be formed in M N, by the simultaneous wheel into line of the sections of each column. By this formation Frederick's left would outflank the Austrian right, and his attack on that point might have been reinforced at the expense of his right, because his right flank would, by reason of the obliquity of the Prussian line, be beyond reach of the enemy's attacks.

In accordance with the above plan, Ziethen with the cavalry of the advanced guard advanced towards Kollin, attacked and overthrew the Austrian cavalry and drove it off the field, part beyond Kollin, and part beyond the village of Radowenitz. In his pursuit of the latter, and in execution of his orders to attack the Austrian right in reverse, Ziethen exposed his flank to the powerful fire of the infantry and artillery posted in the wood of Radowenitz, and his cavalry suffered so severely that it was obliged to retire.

Meanwhile General Hulsen with the infantry of the advanced guard attacked the village of Krezor, dislodged the defenders, and took the battery there posted. The defenders retired, a part on the wood, a part on the troops occupying the main Austrian position in rear of Krezor; and Hulsen, perceiving that he was outflanked, and that he was unsupported by the main body of the Prussians, limited his efforts to holding his ground.

During this time the main body was executing its long flank march in front of the enemy's position, and was grievously annoyed by the fire of the Austrian troops in and around the villages which covered the Austrian front. Instead of continuing their march in regular order, one battalion formed front to the right to drive the Austrian skirmishers from the standing corn. The rear brigades, naturally thinking they should conform to the movement, formed line to the right, and attacked the Austrian troops simultaneously at four different points along their front, while the intended attack on the Austrian right was not supported at all.

It is sufficient to say that the result was the total defeat of the Prussian army, which was obliged to retreat upon Nymbourg, and there to cross the Elbe. The Prussian loss was 15,000 men; that of the Austrians 5000.

Observations.

In these operations Frederick again violated Principle 1. by dividing his force into three parts, and exposing each fraction to the attack of a superior enemy,—one fraction being sent to a distance to observe and hold in check Daun's superior army, a second under the King in person being engaged in blockading Prague on the right bank of the Moldau, while the third, under Keith, remained always on the left bank.

Prince Charles again showed himself wanting in enterprise. He should have availed himself of the advantage which Frederick's movements gave him in respect to Principle 1., to apply that Principle by attacking Frederick, when weakened by the detachment of Bevern, with his whole force, and by afterwards attacking Keith on the left bank. His possession of Prague and its bridges gave him immensely the advantage of interior lines; and the only communication between the two fractions of Frederick's force, viz. that by the bridge of Podhaba, might easily have been destroyed; but if not, that communication was so circuitous (or "exterior") that the fraction on either bank could have been overwhelmed before the other could have arrived to its support.

The Prussian army on the right bank amounted to

50,000 men; of whom 25,000 were detached under Bevern. Prince Charles had 32,000 men available for either operation, after leaving 10,000 for the defence of the city.

The army of Daun, after being reinforced, was superior to the Prussian army on the right bank; it was therefore to be expected Daun would endeavour to raise the blockade. Under these circumstances, Bevern's corps of observation should not have been removed to a greater distance than one day's march, instead of three as it was at Kollin, and its position should have been strongly entrenched. It would thus have been within reach of being supported by Frederick with a part of his blockading force, to resist the attack of Daun, who might thus have been beaten and repulsed before the besieged were aware of his approach. Besides this, considering the aggregate numerical inferiority of the Prussian troops on the right bank (viz. 50,000 Prussians to 97,000 Austrians, the last total being composed of 42,000 under Prince Charles, and 55,000 under Daun), the six weeks which intervened between the battles of Prague and Kollin should have been employed by Frederick in securing the position of his blockading force by the construction of lines of circumvallation, in accordance with the remarks on such lines in Chapter V.

It is difficult to conceive on what grounds Frederick

decided on attacking the enemy's right wing at the battle of Kollin, when he found himself placed by accident almost in the same relative position to the Austrian left wing which it was the object of his rash march to assume towards the other.

In another point of view also the attack on the Austrian left wing was the most advantageous, since Daun, defeated, could not have retreated on Prague to reinforce Prince Charles, because the Prussian army would have been between the two, but must have retraced his steps to Moravia. On the other hand, if Frederick had succeeded in his meditated attack on the Austrian right wing, Daun, defeated, would have retreated upon Prague, the road to which was left open by the Prussian flank march; and he would thus have effected the very object which Frederick fought the battle to prevent.

The Austrian position was weak on the left flank; it was otherwise good. It observed Maxims 12. and 13., inasmuch as it had the choice of two lines of retreat, viz. on Prague and Moravia, and, if cut off from the one, it might have adopted the other. It peculiarly observed Maxim 16., in being covered by villages strongly occupied along the front; and Maxim 17. as regards the security of the right flank, which the village of Krezor in front, and the wood and village of Radowenitz in echellon to the rear, completely protected.

Frederick by his advance to fight at Kollin, violated Principles 1., 2., and 3. Principle 1. as already explained; Principle 2. because he exposed his communication with Prague, which was his natural line of retreat, to the attacks of Prince Charles. Defeated, he could not retreat upon Prague to meet Prince Charles in front, with a victorious enemy following him in rear. He was therefore obliged to effect his retreat on Nymbourg, and was thereby thrown on very exterior lines.

Battle of Hastenbeck, 1757.

Marshal d'Estrées led a French army of 80,000 men across Westphalia, and advanced to the Weser in the design of invading Hanover which was defended by an army of 60,000 Hanoverians, Hessians and Brunswickers, under the Duke of Cumberland which was in position at Hastenbeck.

Position of the Duke.

The right rested on the River Weser; the centre was in rear of the village of Hastenbeck; the left, which was thrown back, occupied the heights of Ochsen. The extent of his line was about 5000 yards. His front from Hastenbeck to the right was covered by an impassable marsh. This part of the position was also on high ground which sloped down to the marsh in front; his line of retreat was on the fortress of

Hameln situated about three miles in rear of his right flank.

On the 24th of July the French marshal took up a position opposite the enemy; and perceiving that the Duke's right and front were so well protected and that the left was also very difficult of access, he resolved to turn the left. For this purpose he detached a force under M. de Chevert during the night to make a circuitous march round the left of the enemy and to seize the village of Afferde in rear of that flank. Chevert arrived at his destination at five in the morning of the 25th, and succeeded in taking possession of the village and maintaining it, because the Duke having only posted two batteries on his left their fire was silenced by Chevert's guns.

On the 25th the French marshal perceiving that he could hope for no success unless he could gain possession of the heights occupied by the enemy's left, sent orders to Chevert to attack them. Chevert marched in the middle of the night and attacked the enemy's left wing from the side of Afferde, at the same time that Armentieres led another body of troops against it from the French main body. The French marshal led the left wing of his army in person against the Hanoverian right by two roads which crossed the morass, and against the centre at Hastenbeck; but owing to obstacles he did not arrive until late in the day. Chevert was then com-

pletely master of the heights on the left; and the Duke would have had great difficulty in retreating had it not been that the Prince of Brunswick with 1200 men ascended the heights on the left of Chevert and made a vigorous attack on his left flank, which, owing to the intricate nature of the ground and the difficulty of judging of the number of his assailants, made him believe their force much greater than the reality, and obliged him to retire for a time in disorder. The French marshal too alarmed by this result, and by the sight of some cavalry in rear of his army which made him believe a reinforcement was coming to the enemy, ordered a general retreat.

The troops of Chevert, however, now aware of the small number of their opponents, returned to the attack and regained their lost ground; but in the interval the Duke of Cumberland gained time to effect his retreat in tolerable order and to carry off his guns.

Observations.

The position of the Duke of Cumberland observed the Maxims 16. and 17. in that his front was covered by the morass over which there were only two practicable passages by causeways; and as to his flanks, that the right was absolutely protected, and the left posted on ground difficult of access. But he neglected Maxim 18. by failing to strengthen his left

flank by entrenchments armed with a powerful artillery. Maxim 14. was observed because his line of retreat lay in rear of the strongest part of his position.

It was fortunate for the Duke that his centre at Hastenbeck was not forced before Chevert's attack succeeded, otherwise his whole left wing would have been cut off from its line of retreat.

The French marshal[1] violated Maxim 21. in detaching Chevert's corps. It was isolated at Afferde during the whole of the 25th and might have been overwhelmed.

He ought to have supported the attack on the enemy's left wing with cavalry, which he did not employ at all. Although it could not have co-operated in the attack, on account of the steepness of the ground, it would have been most useful in deciding the victory and hindering the retreat of the enemy afterwards.

He showed himself wanting in presence of mind in ordering a retreat because of the appearance of some light cavalry in his rear. At the most he need only have detached a brigade of cavalry to repulse them.

It was with reference to his conduct on this occasion that Napoleon made the remark which is given in Chapter VI. on the qualities of a general-in-chief.

Battle of Torgau.

In November, 1760, the Austrians under Marshal Daun occupied the strong position of Torgau with 64 battalions, and 141 squadrons; — their immediate base of operations was Dresden, which had been taken from Frederick during the preceding campaign.

Frederick approached Torgau from Leipsic with 68 battalions and 120 squadrons. He found the Austrian position very formidable, but he determined to attack it for the following reason. Russia was one of the coalition against him; hitherto the Russian armies had produced no sensible effect upon the war because their custom was to retire at the end of each campaign to take winter quarters in Poland, and in the spring following to march again to the Oder. But at this juncture the Russian general had entered into an engagement with the Austrians to winter on the Oder provided they maintained themselves at Torgau. This would have been ruinous to Frederick, since he would have found a great difficulty in recruiting his army with the Russians in the heart of his territory; and his weakened forces would have been exposed to be hemmed in early in the next campaign between the Russian and Austrian armies. He was, therefore, impelled by paramount

considerations to risk a great deal to drive the Austrians from Torgau.

The Austrian Position.

The left rested on the fortress of Torgau and the Elbe; the left wing occupied the heights of Zinna; the right rested on the forest of Donnitsch and occupied the heights of Siptitz.

The lake of Torgau secured the left front from attack; the front, which was besides difficult of access on account of the steepness of the heights, was covered by the marshy stream called the Rhorgraben, and the right flank, resting on the forest, was covered by strong and extensive abattis.

The King, judging their front unassailable, and their flanks not to be turned, resolved to attempt two attacks in the centre, one in front, and one in rear. For this purpose he divided his army into two parts.

One third under the command of Ziethen was destined to occupy the attention of the enemy in front, by threatening to attack, which it was to do *really* as soon as the King, who led the remaining two thirds by a long circuitous march through the forest of Donnitsch, was able to commence his attack on the enemy's rear.

Frederick's troops marched in three columns on different routes. In his march through the forest he

encountered the Austrian outposts who gave the alarm to Daun; and he, perceiving that he was to be attacked in rear, countermarched his whole line. Thus the right occupied the heights of Zinna, the left those of Siptitz.

About one o'clock the King debouched from the forest, but only with one of his columns, consisting of 10 battalions, a few squadrons, and 20 guns. The other columns had not arrived. Just at this time Ziethen, who had advanced on the original front of the Austrians, became engaged with the Austrian second line, which faced about and received him with a brisk cannonade.

Frederick, fearing Ziethen would be overwhelmed, formed his handful of men in two lines, and under cover of his 20 guns attacked the Austrian army in position. His battalions and guns were swept away in a moment by the fire of Daun's line, and by the grape from 200 guns.

The second and third columns arriving in succession were pushed into the fight, and in succession repulsed and almost destroyed. The Duke of Holstein who commanded the cavalry, and had not made his way through the forest in time to support these attacks, now came up, and by a brilliant charge improved the King's prospects a little; but he was notwithstanding obliged to retreat and abandon the field

of battle. Meanwhile Ziethen, hearing the firing in his front diminish and recede, concluded that the King was beaten; he determined to try to join him by the left; he succeeded in reaching the village of Siptitz and in mounting the heights above it, thanks to that part of the Austrian line having been weakened by reinforcements sent from it to the first line. Ziethen succeeded then in uniting with the King's reserve, which had not been engaged; he formed this force, consisting in all of 28 fresh battalions, on the heights of Siptitz, the key of the Austrian position, at right angles to their line. The sun had now set. The King, informed of this lucky stroke, joined him with 10 weak battalions he had organized out of the wreck of forty which had been engaged in the battle. At midnight the Austrians retreated and crossed the Elbe.

Observations.

The Austrian position fulfilled all the requirements of Maxims 12. 14. 16. and 17. Maxims 12. and 14. because Dresden was the immediate base, and the most secure route to it from the field of battle lay through Torgau by the right bank of the Elbe, and the line of retreat was in rear of the left flank, which was unapproachable by the enemy.

Maxims 16. and 17. evidently in a very high degree.

Frederick's success was owing to good luck. He violated Maxim 21 in the most dangerous manner in separating his army into two parts, and exposing the weaker part under Ziethen (one third of the whole) to be beaten, while he with the other part effected a very circuitous and uncertain march round to the enemy's rear:—thus the only way in which these separated portions could communicate was actually through the Austrian position—as really happened. Such a victory should have been impossible.

It is evident that he violated Principles 1. and 3. and Maxim 23. in bringing fractions of his troops into collision voluntarily with the mass of the enemy; in giving the Austrians the advantage of very interior lines; and by persisting in attacking with successive fractions of his force when by a short delay he might have united them.

Ziethen won the battle; his resolution to unite with Frederick by forcing a passage through the enemy is a fine instance of the value of boldness in war, when based on self-confidence. Of this battle Napoleon says it is of all his battles that in which Frederick committed most faults, and the only one in which he displayed no talent.

Had Frederick carried his whole army round to the enemy's rear, he would then have acted in accordance with the rules of war, as that movement would have placed his army in direct communication

with his own territories, besides that the enemy's position was not so strong on that side.

Battle of Nordlingen, 1645.

On the 4th of August, 1645, Condé and Turenne led a French army of 17,000 to attack the Count de Merci who commanded a Bavarian force of 14,000, posted in a strong position between Nordlingen and Donauwerth.

Bavarian Position.

The right occupied the heights of Weinberg, and rested on the Warnitz river; about 200 yards in front of the centre was the village of Allerheim which was occupied, and whose church and cemetery were converted into a sort of citadel by loop-holing, barricading, &c.; the left, commanded by Jean de Vert, occupied the hill and the castle of Allerheim, and rested on a stream called the Eger.

Merci according to his custom began to entrench his position immediately on its occupation.

French Disposition.

Condé ranged his army in order of battle. The left resting on the Warnitz, composed of 16 squadrons and 6 battalions, was commanded by Turenne. The centre, commanded by the Count de Marsin, was opposite the village of Allerheim, and

consisted of 6 battalions. The right, resting on the Eger, was composed of 4 battalions and 10 squadrons, and was commanded by Marshal de Grammont. In a second line in rear of the right was a reserve of 4 battalions and 6 squadrons under M. de Chabot.

The two armies were about equal in infantry and artillery. The French were superior in cavalry.

At three o'clock in the afternoon Condé ordered Marsin to attack the village of Allerheim. The Bavarian infantry posted in the village defended it with so much obstinacy, that although the whole of the French infantry of the centre and right were successively engaged and headed by Condé in person, they were always repulsed, and at length retired from the contest broken and dispirited. On the Bavarian side the commander, Merci, was killed.

Jean de Vert, who commanded the Bavarian left, charged the French cavalry of the wing opposed to him which had been denuded of infantry to feed the attack on Allerheim; he overthrew both lines and pursued them in disorder to a considerable distance from the field of battle. The battle seemed hopelessly lost. Condé's left alone stood firm, his right and centre had disappeared. He repaired to the left where Turenne commanded to consult with that marshal. They resolved to make a desperate attack on the enemy's right. They did so, over-

threw the troops opposed to them, took prisoner the general who commanded the Bavarian right wing, and captured the battery of Weinberg. Turenne thus succeeded in placing himself on the flank of the Bavarian general position. The greater part of the Bavarian infantry were in the village of Allerheim. Turenne countermarched his troops, and led them (left in front) in rear of the Bavarian line, so as when halted and fronted to face the village of Allerheim, thus occupying nearly the same ground as that originally held by the Bavarian centre. Meanwhile Jean de Vert, informed of what had occurred, stopped his pursuit and returned to attack Turenne. It was growing dark. De Vert, in place of marching against Turenne by the most direct line, resumed his first position on the left of the Bavarian line, then countermarched, and led his troops left in front to attack Turenne. But these pedantic movements had lost valuable time, and with it the battle. It had become dark. The Bavarian infantry in Allerheim discouraged by the death of their general, believing themselves to be isolated from succour and to be surrounded by Turenne, and ignorant of Jean de Vert's approach, capitulated. De Vert perceiving that his right and centre no longer existed, retreated, followed by Turenne, to Donauwerth, where he passed the Danube, abandoning all his guns except four.

Observations

The position of Merci was very good.

His flanks were secured. His centre was protected by the village 200 yards in front of his general line. Allerheim was evidently *the* decisive point, but the Bavarian right was *a* decisive point, as its possession by Turenne enabled him to effect that movement without which the infantry in Allerheim would not have surrendered, and without which the fortune of the day would certainly have been reversed.

Without a superiority in infantry and artillery Condé was not justified in attacking so strong a position. Allerheim was too strong to be successfully attacked by infantry alone; a powerful artillery fire was required to reduce it.

Condé weakened his right by withdrawing the whole of the infantry, which caused De Vert's attack to succeed. The defeat of the French right and centre should have been decisive; but De Vert pursued too far like Rupert at Naseby, and like him also he found the battle lost before he could attempt to restore it.

But it might still have been retrieved but for the exterior lines on which De Vert moved to attack Turenne, in place of marching diagonally across the plain straight to Allerheim as he should have done.

An ordinary general in Condé's place, when he saw his right and centre defeated, would have thought of nothing but how to effect as orderly a retreat as possible, under the protection of the left wing which remained entire. Had he so acted, the probability is that he would have suffered great losses in retreating with a defeated and dispirited army before a superior force, flushed with victory. He would certainly have suffered much loss of honour. The bold resolution he took on this occasion is a fine illustration of the Chapter on Moral Agency in War.

Napoleon's remark on this subject is that "the glory and honour of his arms should be the first consideration with a general who fights a battle; the safety and preservation of the men is only secondary, but the safety and preservation of the army is frequently best consulted by a course which may appear bold even to temerity."

Battle of Blenheim.

At mid-day on the thirteenth of August, 1704, the allied army under Marlborough and Eugene, consisting of 52,000 men and 52 guns, had formed to attack the French and Bavarians, 56,000 men and 54 guns, under Marshal Tallard.

French Position. (See Plate VIII.)

Their right was in rear of the village of Blenheim, which was strongly entrenched and occupied by a

very strong force of infantry. The front was covered along its whole extent by the Nebel. The left, composed of Bavarians, rested on a range of hills thickly wooded beyond Lutzingen. The extent of this position was about three miles. On the French side of the Nebel the ground sloped gently down to the stream along the whole front.

Two miles from Blenheim and one from Lutzingen was the village of Oberglauh on the brow of this slope, within musket shot of the Nebel. Half way between Oberglauh and Blenheim on the English side was Unterglauh, on the very brink of the stream. The ground bordering the Nebel between Oberglauh and Blenheim was marshy and in many places impassable, and below Unterglauh the morass considerably expanded. On the Nebel a little above Blenheim were two water-mills which were employed by the French to impede the passage of the stream — and about half-way between Unterglauh and Blenheim the great road from Donauwerth to Dillingen crossed it by a stone bridge.

On the supposition that the Nebel was impassable between Oberglauh and the Mills, Tallard and the Elector placed the whole of their infantry on the wings, and the cavalry in the centre, in two lines. The village of Blenheim, which was separated from the Nebel by a slip of swelling ground, was occupied by all the French infantry of the first line, part of

the second, and by a battalion of artillery; it was very strongly entrenched, and the lieut.-general commanding the troops in it was ordered to defend it to the last.

From Blenheim to near Oberglauh the line consisted almost entirely of cavalry. From Oberglauh to the left, of infantry. That village was occupied by infantry. In Tallard's second line he posted three brigades of infantry in the centre of the cavalry. And he had a reserve force of cavalry in rear. His guns were judiciously posted along the front so as to bear on the columns of Eugene advancing on Tallard's left and those of Marlborough on the right.

Marlborough's Dispositions.

Strong batteries were posted on the English side of the Nebel to counterbatter the French, particularly on the commanding ground below Unterglauh, and five pontoon bridges were commenced, one above Unterglauh and four between it and the Mills.

Perceiving that Blenheim and Oberglauh were too distant for their fire to cross on the intervening space, and that the brow occupied by the hostile cavalry was too remote from the Nebel for that arm to oppose the passage of the stream, it was agreed that Eugene should attack the Bavarians on the left while Marlborough attacked Blenheim, at the same

time that he pushed his cavalry, supported by infantry, across the Nebel, to break the enemy's centre.

At one the battle commenced. The English infantry descended on the left to the bank of the stream, took possession of the water-mills under a fire of grape, and advanced to attack Blenheim — constantly repulsed however; Marlborough perceiving that it was much more strongly occupied than he had supposed, and that the French had denuded their centre of infantry for its defence, sent orders to his troops engaged at the village to desist, but to keep the defenders in check by the expectation of a threatened attack — in accordance with which they retired under cover of the swelling ground and kept up a fire over its crest.

Meanwhile the attack on the centre had commenced by two lines of infantry, having between them two lines of cavalry. This disposition was adopted that the cavalry in their passage of the river and formation on the other side should both be covered and supported by infantry. The first line of infantry crossed by the bridges near Unterglauh; as soon as they were formed, the cavalry advanced to ford the stream; they suffered severely from the French guns which were placed to enfilade the passage. The first line of cavalry formed, advanced beyond the infantry, and were immediately driven back to the edge of the stream by the enemy's

superior cavalry supported by the artillery and musketry fire from Blenheim; they re-formed under protection of their infantry, and the second line having then crossed, drove back the French in their turn. Meanwhile, nearly the whole of Marlborough's force had crossed the Nebel and formed front to the right and left of Unterglauh. The cavalry formed in two strong lines fronting the enemy, the infantry in the rear with intervals for the squadrons to pass through if necessary. All was prepared for his grand effort on the centre.

Eugene on the right attacked the enemy's left flank, which he also attempted to turn. He maintained an unsuccessful contest for nearly four hours, but at last succeeded with his infantry in driving back the enemy's left behind Lutzingen; but he was in a critical position, from which he could neither advance nor retire, his cavalry having been completely broken and driven off the field. He was however relieved from this by the success of Marlborough on his left. The grand attack on the centre was made about five o'clock. The enemy's cavalry was broken and driven back to the right and left diagonally. The three brigades of infantry were cut to pieces. The road to Dillingen, by which only the troops in and about Blenheim could retire, was thus in Marlborough's possession.

The Elector of Bavaria withdrew his troops from

the left to Dillingen. The French who were not cut off retired to Hochstadt, but the cavalry of the French right wing which had been driven to Sonderheim was taken or destroyed, and the infantry surrounded in Blenheim capitulated to the number of 11,000 men. Marshal Tallard himself was taken prisoner with the body of cavalry at Sonderheim.

Observations.

The French position was good, except as regarded the village of Blenheim. Tallard violated Maxim 13., because its situation in a loop of the Danube evidently renders retreat difficult.

Instead of placing his right at Blenheim, it should have been formed across the high ground in the rear, and should have rested on the Danube in front of Sonderheim. Blenheim should have been occupied as an advanced post.

The position fulfilled the requirements of Maxims 16. and 17., the fronts and flanks being well protected.

Tallard neglected Maxim 19. in shutting up nearly all his infantry in Blenheim, and enabling the enemy to paralyse its action by threatening to attack with a very inferior force.

Also Maxim 14., because his line of retreat (the road to Dillingen) being in rear of the right centre,

that point should have been the strongest instead of the weakest.

Marlborough seldom made a mistake; he committed none in the battle of Blenheim.

Battle of Ramillies.

Marlborough designed to besiege Namur in 1706, and Marshal Villeroy, who had received positive orders from Louis XIV. to risk a battle to prevent him, marched for that purpose towards Tirlemont.

Marlborough advanced to meet him.

The united forces of Villeroy and the Elector of Bavaria amounted to about 60,000 men.

Those under command of Marlborough, consisting of English, Dutch, and Germans, were of nearly equal strength.

The French army occupied the strong position of Mont St. André or Ramillies.

French Position. (See Plate IX.)

The left, consisting of infantry in two lines, was in the fork of the rivers Jauche and Little Gheet, and extended along the spur of high ground from Autre Eglise to Offuz; the centre, likewise of infantry, from Offuz to the high ground behind Ramillies; the right, comprising nearly all the cavalry, in number 100 squadrons, in two lines, were posted in echellon

in advance of the centre on the open ground in front of the tomb of Ottomond, between Ramillies and the Mehaigne river.

The village of Ramillies, in front of the centre, was entrenched and occupied by 20 battalions of infantry and some artillery. A brigade of infantry defended the bridge of Tavieres situated amidst enclosures and marshes at a distance of half a mile in front of the cavalry, a mile and a half in front of the main position, and about the same distance from Ramillies. The whole front from Ramillies to the left was covered by the marshy course of the Little Gheet, and the villages of Autre Eglise and Offuz were occupied by infantry.

Remarks on the Position.

It will be seen on reference to the Plate that it was concave towards the enemy, and consequently was subjected to the disadvantage of this order of battle in that movements made from one part of the line to another must be made on the circumference instead of the chord. This was peculiarly the case in the present instance, since the marshy nature of the ground would oblige troops, moving from Autre Eglise to the right, to pass through Offuz.

The position left for occupation by the enemy on the other side of the Little Gheet was, on the contrary, convex towards the French; and gave him the

advantage of being able to move by the shortest possible line from one point to another.

The tomb of Ottomond was the key of the position; as, if gained by the enemy, the French army would be taken in flank.

Ramillies was a decisive tactical point, because it covered the French centre, and the troops occupying it would take in flank any attack by the enemy on Ottomond's tomb; would protect the cavalry from pursuit if driven back; and would impede the retreat of the enemy after an unsuccessful attack.

To occupy Tavieres was a mistake; it was too far from the main position to be protected by its guns; it could be no object to the enemy to detach a force across the Mehaigne for the purpose of crossing over the bridge.

The cavalry was well posted; their right resting on the marshes of the Mehaigne, their left protected by the defenders of Ramillies.

Although the left was covered, yet the obstacles which protected it from aggression equally prevented it from attacking; and from the nature of the ground the whole line from Offuz to the left could be of little active use in a battle.

Marlborough formed his army opposite to the French, between Foulz on the right and Boneffe on the left on high ground, in two lines; the infantry in the centre, the cavalry on the wings, with twenty

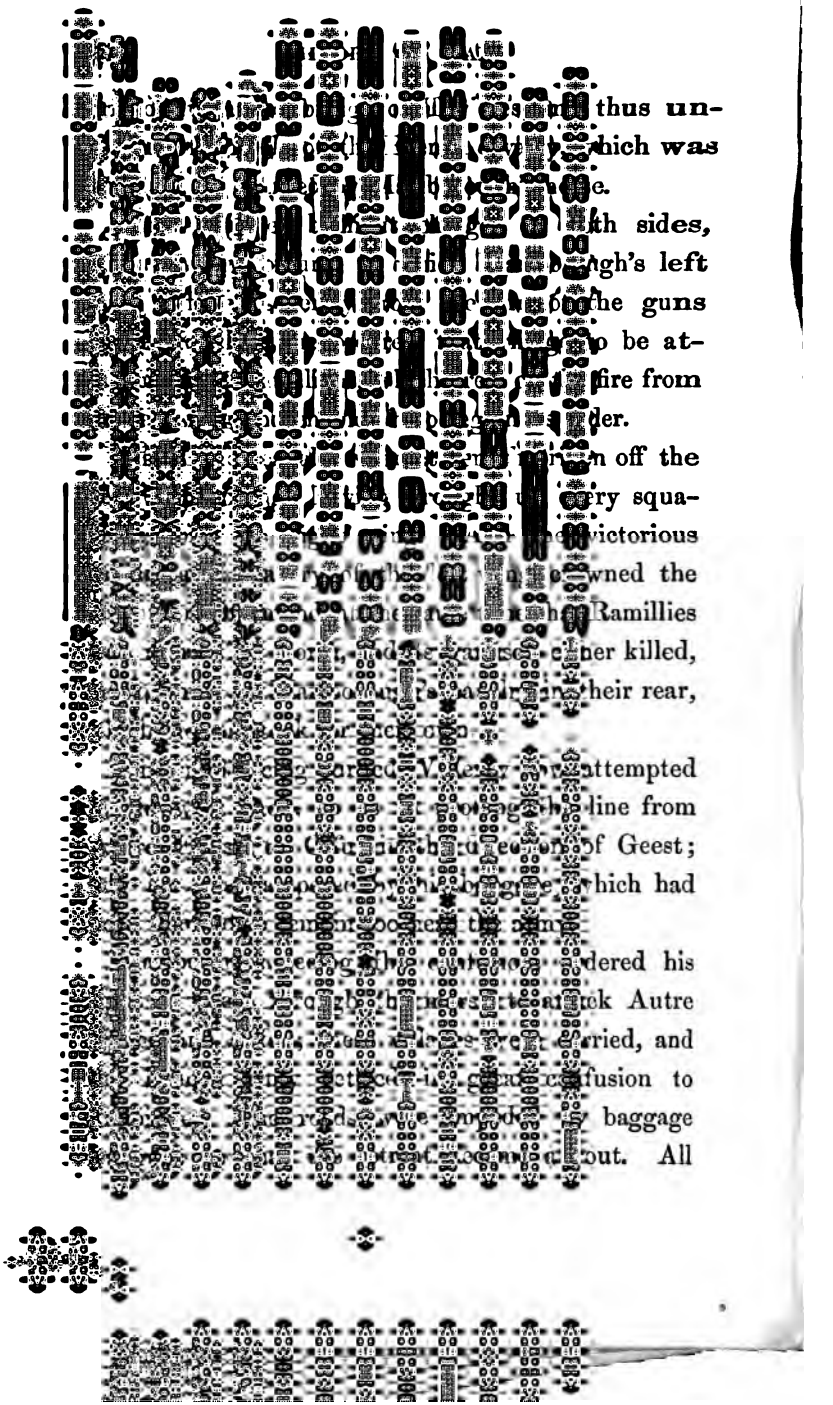
squadrons in rear of the left centre in third line. The dip of the ground concealed the movements along the rear of his line from the observation of the enemy.

Marlborough resolved to attack the enemy's right, to gain the tomb of Ottomond, and take his army in flank. To induce Villeroy to weaken that part he ordered a feigned attack on the French left. The infantry of the right wing in two lines, supported by cavalry, marched down the slope towards the river, threatening the villages of Autre Eglise and Offuz. Villeroy, alarmed for his left, detached a very considerable body of infantry from his centre to reinforce it. Marlborough waited till the enemy's movement was nearly completed, and then ordered his right to retire to the elevation which they had quitted. With his first line he halted and showed front to the enemy, but he carried his second line over the height to the rear, and moved it rapidly, concealed by the nature of the ground, to the left.

He had thus strengthened his attacking force at the same time that he induced the enemy to weaken the point it was his object to attack.

The battle commenced at half-past one.

The cavalry of the left wing, supported by infantry marching in parallel order between the cavalry and the marshes of the Mehaigne, marched against the enemy's right. The infantry dislodged the French



the enemy's cannon and baggage were taken—his loss in men was 15,000.

The loss of the allies was 3633, of whom 365 were officers.

Observations.

Marlborough's position observed Maxims 15. 16. and Principle 3. He made a skilful use of Maxim 19. by availing himself of the nature of the ground to hold in check Villeroy's left with a very inferior force, and to apply Principle 1. at his expense by reinforcing his own left while he induced his opponent to weaken the corresponding part (the right) of his line.

Although his line of retreat was in rear of the strongest part of his position, in obedience to Maxim 14. Villeroy violated Maxim 13. by retaining his baggage so near the army as to block up the roads by which it must retreat on Judoigne.

The result of the cavalry fight is one of many instances, as regards that arm, of the victory remaining with that general who can produce the last reserve.

The proportion of the allied loss in officers to their total loss, was one in ten, which is the same proportion as that of the English army at the battle of Alma.

Battle of Arcola, 1796. (See Plate X.)

Two Austrian armies marched on Italy by different routes. One under Davidowich of 18,000 men by the right bank of the Adige, the other under Alvinzi of 40,000 men by Bassano and Vicenza.

The project was that these forces should unite at Verona, and together march from thence to liberate Wurmser's army, which was blockaded in Mantua by a French force of 8000 men.

Napoleon had advanced to attack Alvinzi, had defeated and driven him across the Brenta on the 6th November, and had prepared to follow him, when he received intelligence from the upper Adige which obliged him to change his plans.

The French general Vaubois, who with 12,000 men was charged with the duty of barring the march of Davidowich, had been driven from one position to another and turned. Davidowich was in full march by Rivoli on Verona. It became necessary, therefore, to fall back on Verona, and to send instantly every disposable soldier to block the line of march of Davidowich by Montebaldo and Rivoli. On the 7th of November Colonel Vignolles, whom Napoleon despatched to assemble at Verona all the disposable troops for that purpose, reached the po-

sition of Rivoli just in time with one battalion to drive back the enemy's skirmishers. He kept the Austrians at bay all that day by putting on a bold appearance. On the 8th Joubert arrived with another regiment, drawn from the blockade of Mantua, and Vaubois, who had retired by the left bank of the Adige, crossed the river, and united with the troops already in position at Corona and Rivoli under Joubert.

On the 7th also Napoleon's army was in march by Vicenza on Verona; on the 8th Alvinzi stopped the retreat which he had commenced, and followed Napoleon.

The road from Verona to Vicenza runs parallel to the Adige, for nine miles, as far as Villa Nova, where it turns sharply to the left in the direction of Vicenza. Between Villa Nova and Verona are the heights of Caldiero, which offer a strong position either to cover Verona, or one from which an army could fall on the rear of an enemy who might advance on Legnago, which place possessed a stone bridge and was occupied by the French.

On the 11th the two armies were in presence — Napoleon at Caldiero, Alvinzi in a strong position opposite. Napoleon attacked unsuccessfully all that day, and at night withdrew to a camp in front of Verona. His position was critical. His absolute safety depended on Joubert maintaining himself at

Rivoli; and Joubert's force, owing to the losses of Vaubois, only mustered about 8000 men.

The army of Napoleon was reduced to 13,000 men under arms. Being too weak to hope anything from an attack in front, on the night of the 14th he carried his army through Verona across the Adige in three columns over its three bridges, and formed upon the right bank. The most perfect secrecy having been preserved, all thought the army was retreating on Mantua; but instead of continuing its movement in that direction, it turned suddenly to the left, and before daybreak reached Ronco on the right bank of the Adige about eleven miles below Verona, where Napoleon had previously ordered the construction of a bridge.

Description of the Ground.

About a mile below Ronco where the bridge was constructed is Albaredo. At this village, the little river Alpon falls into the Adige from the north. The road from Verona to Vicenza crosses it by a stone bridge at Villa Nova.

The whole country between the Adige and the Alpon is an impassable marsh, traversed by a few causeways. From the bridge at Ronco one of these leads in one direction through the village of Porcil to Verona, with a branch to Caldiero, in another direction to the village of Arcola on the Alpon, about

half-way between Albaredo and Villa Nova. The causeway from Ronco to Arcola strikes the Alpon at about a mile and a half from Ronco, and from that point runs close and parallel to the river to Arcola, a distance of two miles; it there turns suddenly at right angles over the stone bridge across the Alpon river, and runs by the left bank to Villa Nova.

Verona was defended by only 1500 men. Napoleon's design was to cross the Adige at Ronco, to direct one column on the road to Porcil, another to Arcola. He would thus prevent Alvinzi from attacking Verona, as the French left column would have been on the Austrian rear, while the head of the Austrian columns would have been stopped by the walls of Verona. Napoleon hoped by this plan not only to preserve Verona, but also, by crossing the bridge of Arcola and marching on Villa Nova, to take possession of the bridge at that place, which was Alvinzi's sole line of retreat; while if attacked by the Austrians on the causeways, their superiority of force would be of no avail, as all would depend on the bravery of the heads of the columns.

On the morning of the 15th, in execution of his plan, Massena was sent with one column along the left-hand causeway to Porcil, the other under Augereau to Arcola to pass the bridge. Augereau found the bridge defended by two Austrian battalions and some guns, posted there to guard the Austrian rear. These

extended along the river from Arcola to the left; the road by which the French must reach the bridge ran along their front only separated from them by the narrow stream; their fire consequently took the French columns in flank and disordered them. Augereau could not force the bridge. Alvinzi sent two columns, one against Massena, the other against Augereau. They were both repulsed; but all the efforts of Napoleon in person to carry the bridge of Arcola failed. General Guieux with a brigade had been ordered to cross the Adige at Albaredo and march up the left bank of the Alpon to take Arcola in reverse; but he was unable to accomplish this until four in the afternoon. The defenders of the village then retired; but the possession of the bridge of Arcola was no longer of the same importance to Napoleon, because Alvinzi, enlightened as to his danger, had already withdrawn his army from Caldiero across the bridge at Villa Nova, with all his parks and reserves, and it was no longer possible to cut off his retreat.

Notwithstanding the success of the French at Arcola, Napoleon's position was embarrassing. If Davidowich succeeded in forcing Joubert at Rivoli, he might march on Mantua, raise the blockade of that place before Napoleon could reach it, and intercept his retreat. Mantua is distant from Rivoli thirty-nine miles, and from Ronco thirty miles of very bad roads. It was necessary for Napoleon to be ready to

march instantly on hearing that Joubert was falling back on Mantua, to unite with his force and to beat Davidowich.

Accordingly he evacuated Arcola during the night, and having left his bivouac fires blazing, withdrew his army to the right bank of the Adige, leaving only one brigade and a few guns at the bridge-head on the left bank. Alvinzi, who became aware of this movement at three o'clock in the morning of the 16th, again occupied the villages of Porcil and Arcola, and pushed columns at daybreak on the causeways leading from those two places to Ronco.

At four o'clock Napoleon (whose force was under arms ready to move against Alvinzi or to succour Joubert as occasion might require) received news that all was well with Joubert up to the night before; the French therefore recrossed the bridge, attacked the Austrian columns to the right and left, and repulsed them with great slaughter. At night the French again withdrew, leaving an advanced guard on the left bank as before. At daybreak on the 17th Alvinzi, believing Napoleon to be in retreat on Mantua, advanced by both causeways in pursuit; but at five o'clock, news having arrived that Joubert still maintained his position, the French army again crossed at Ronco, and at twelve o'clock had again repulsed the Austrians on both sides.

Napoleon, fearing that these daily combats might

continue long enough to enable Davidowich to force the position of Joubert, determined,—after carefully estimating the enemy's loss in killed, wounded, and prisoners, which it was supposed had reduced his army by at least a half, and taking into account the moral effect on the two armies of the result of the three days' fighting,—to carry his army into the open ground on the left bank of the Alpon river, to attack Alvinzi in the plain. He accordingly threw a bridge over the Alpon near its mouth, by which his right crossed over to the left bank. It was opposed for some time by the Austrians, who had sent reinforcements to this point, until Napoleon, by the stratagem of sending a captain with twenty-five horsemen down the Adige, to burst suddenly with a great blowing of trumpets on the left flank of the Austrians, which was in the direction of Legnago, and by the appearance of part of the garrison of that place in their rear, obliged them to retire. The left under Massena then crossed at Arcola; the French line was formed from that village to San Gregorio, in which position the army passed the night, and the next morning (18th) Alvinzi retired to Montebello.

Meanwhile on the 17th Joubert, attacked by Davidowich at Rivoli, had fallen back to Castel Novo on the road to Mantua. On the 18th the French army marched through Verona to succour

Joubert. Davidowich, attacked by superior forces, retired upon Trent with considerable loss.

Observations.

This is one of the most remarkable battles on record, and is a signal instance of the genius of a commander supplying the place of numbers.

1st. It is evident that Napoleon had the advantage of a central position; his two armies on the Adige were between those of the Austrians. He was retiring on interior lines, in accordance with Principle 3. and Maxim 4. as regards double lines of operation, which Alvinzi as evidently violated.

Alvinzi also violated Maxim 3. in designating Verona as his point of union with Davidowich.

Napoleon's position on the causeways leading from the Ronco bridge united in its favour Maxims 10. 12. 15. 17. 19. Maxim 10., because the causeways being essentially defiles, the result of an encounter would depend entirely on the bravery of the few men who composed the head of the column; and thus the advantage of numbers was completely lost to the Austrians.

Maxim 12. remarkably, because it was impossible for the Austrians to possess themselves of Napoleon's line of retreat without either first capturing Verona, and so turning his rear, or marching

over the bodies of himself and his columns, on the causeways.

Maxim 15., because by falling back on the two causeways the two portions of his army could unite.

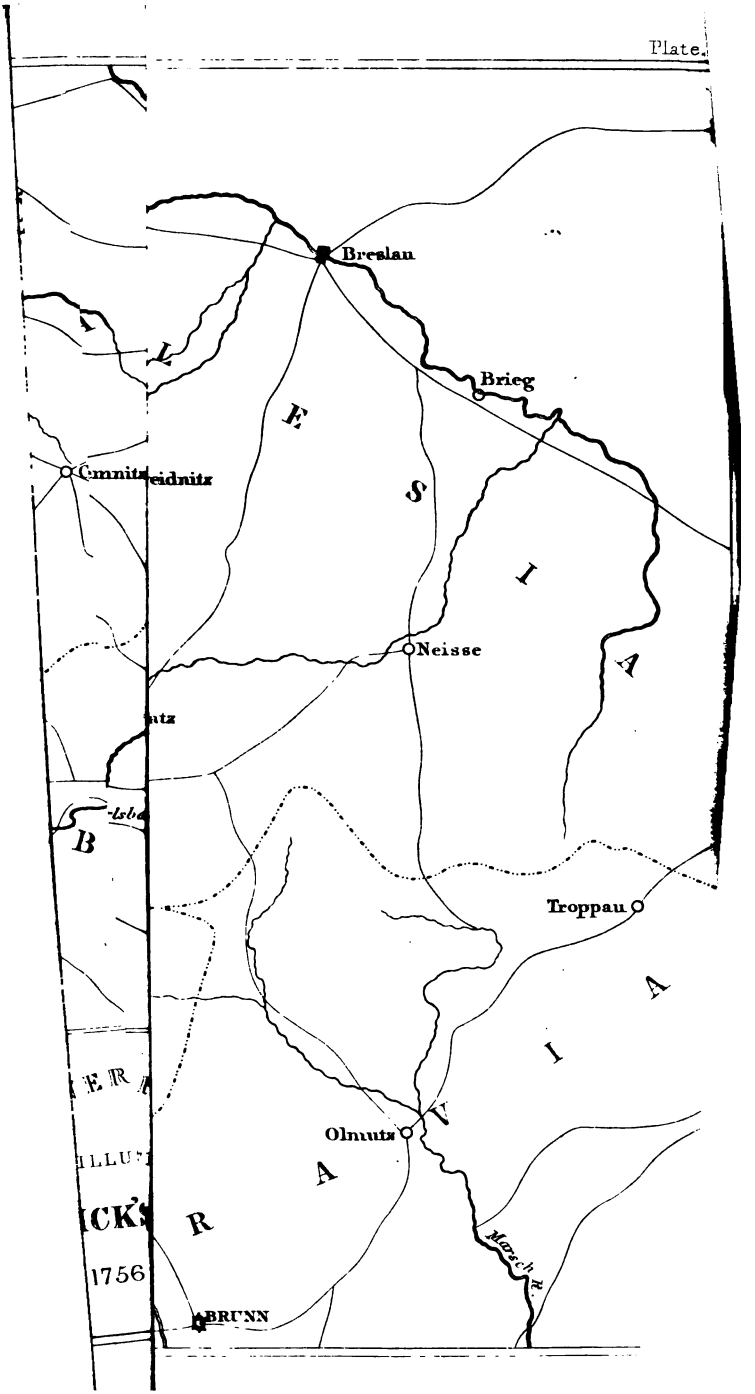
Maxim 17., because it was impossible to turn his flanks.

Maxim 19., evidently for the same reason as Maxim 10.

Massena's position on the left causeway at Porcil would have enabled Napoleon to apply Principle 2. if Alvinzi had advanced on Verona; and as the Austrians did not advance, the attack on Arcola was made in the design, if successful, of applying the same Principle by seizing the bridge of Villa Nova.

THE END.

LONDON:
PRINTED BY SPOTTISWOODE AND CO.
NEW-STREET SQUARE.


Breslau
Brieg
Neisse
Troppau
Olmutz
BRUNN
March R.
1756

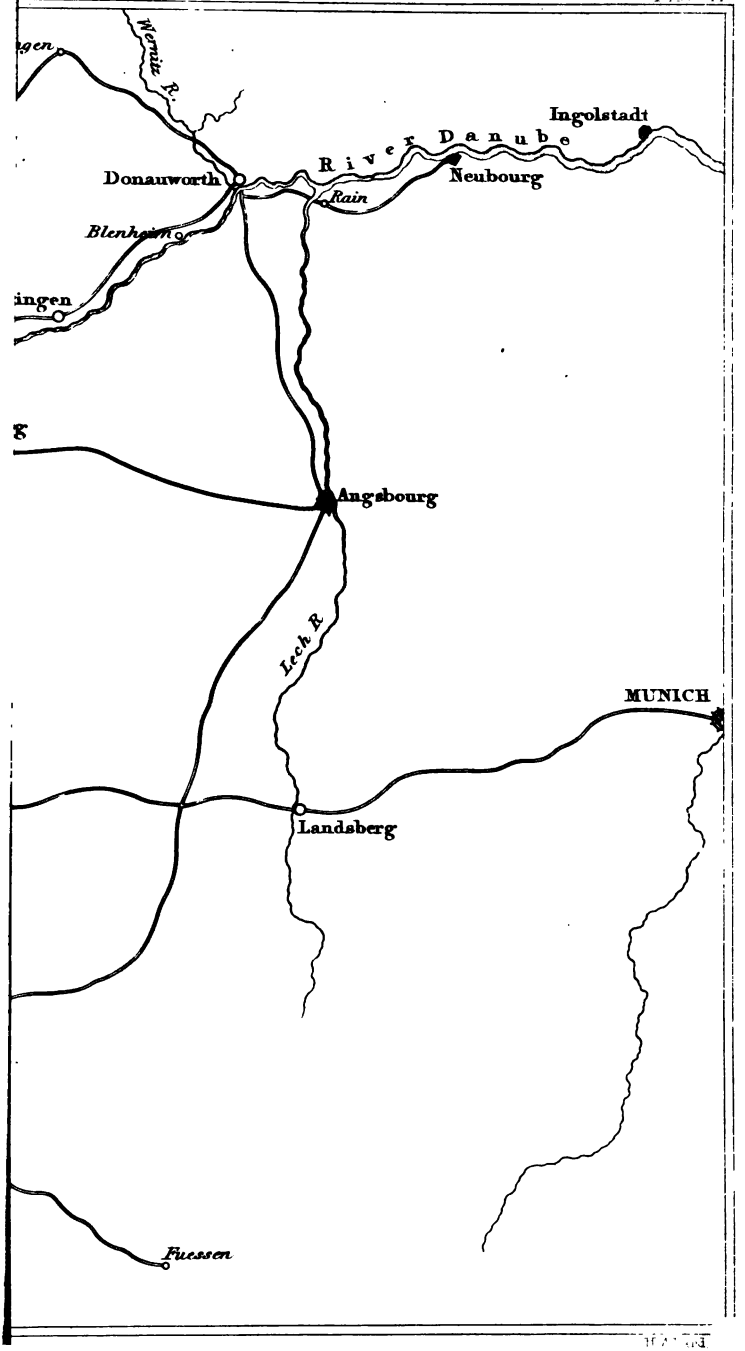
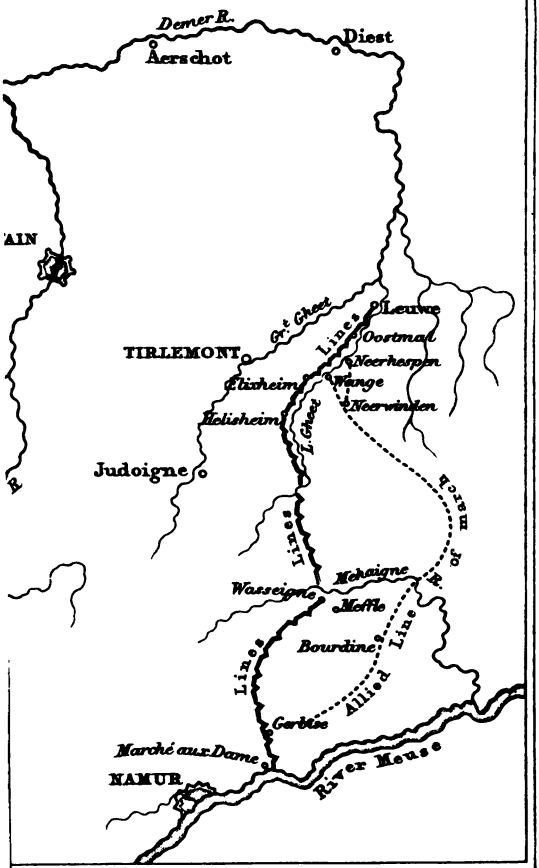

Wernitz R.
Ingolstadt
River Danube
Donauworth
Neubourg
Rain
Blenheim
Augsbourg
Lech R.
MUNICH
Landsberg
Fuessen

Plate. III.

SKETCH SHEWING

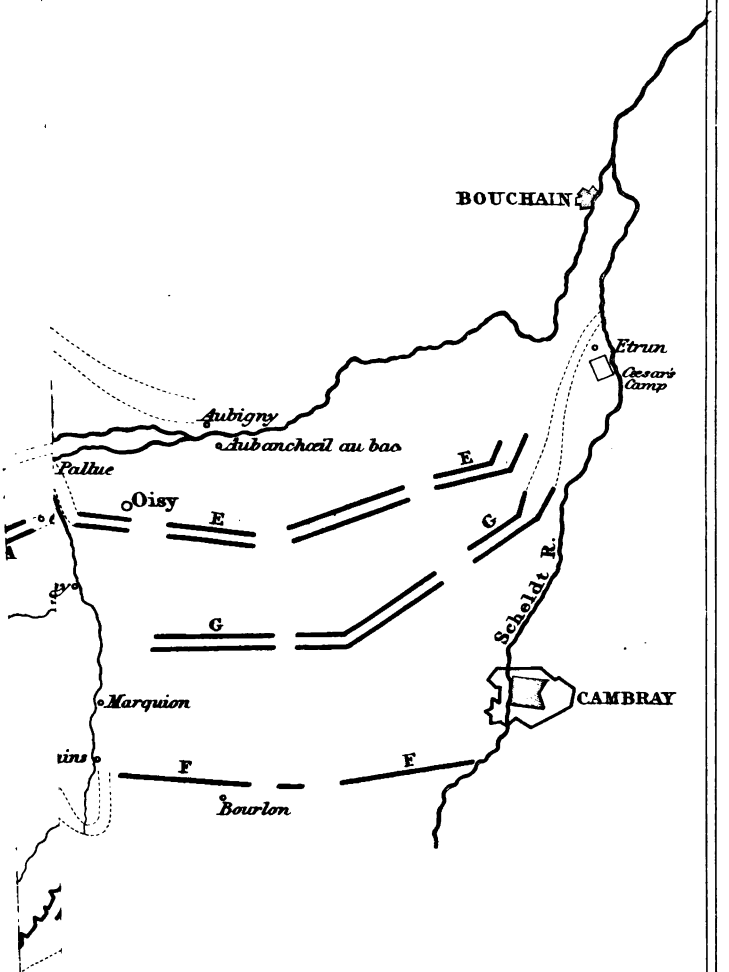
ES OF THE MEHAIGNE

) BY MARLBOROUGH IN 1705.



H. Adlard

London, Longman & C°



E. Position of Marlborough on the evening of the 5th

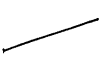
F. Position of Villars in the morning of the 6th

G. Position of Marlborough to prevent Villars passing the Scheldt.

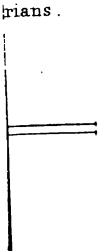
NB. There is no attempt to shew the ground or the roads.

H.Adlard sc.

HE GR



trians.



TH

u

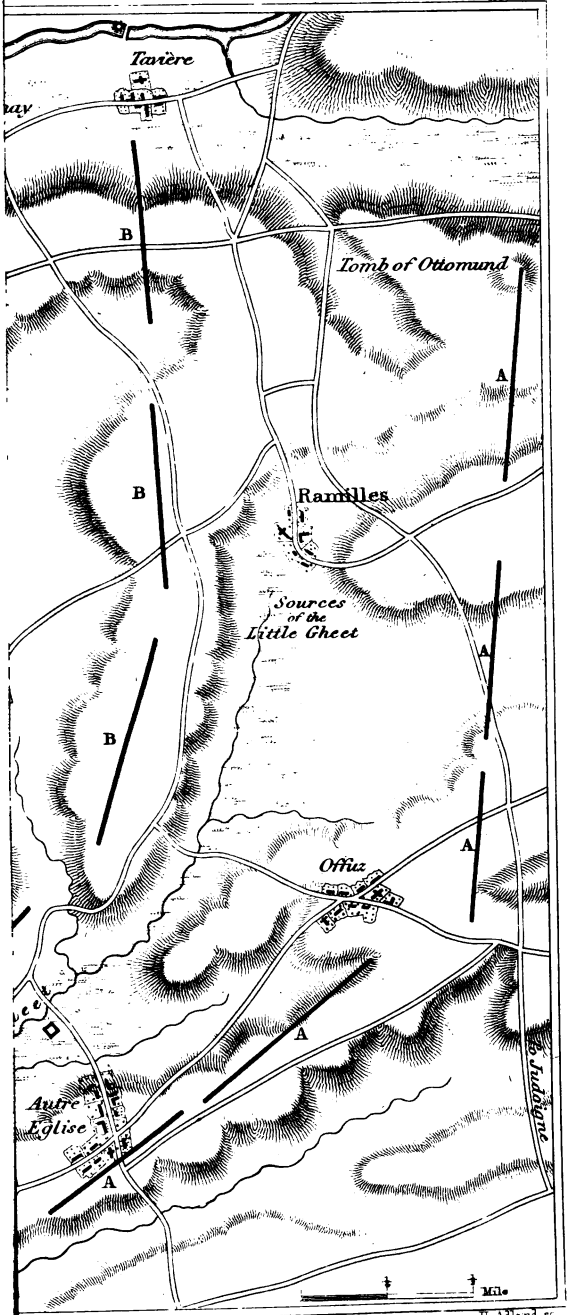
Army

late VI

Berghausen
B
B
B
To Donauwerth
RIVER DANUBE

LE OF RAMILLES.

Plate IX.

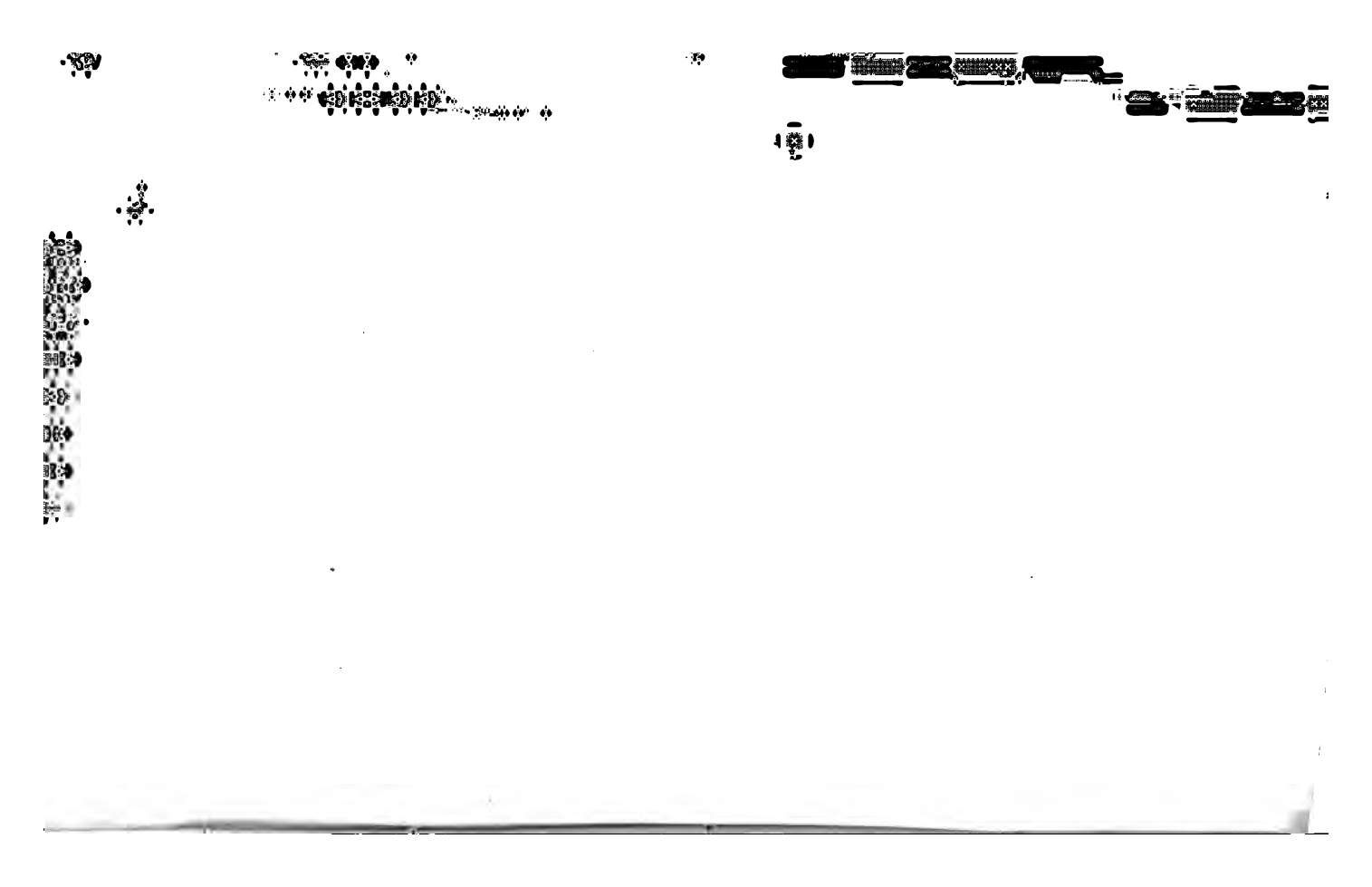


French. B. English Position.

H. Adlard sc

London: Longman & Cº

TC



NEW AND CHEAPER EDITION OF ADMIRAL PARRY'S LIFE.

A *New Edition*, in fop. 8vo., with Portrait and coloured Map of the North-West Passage, price 5s. cloth,

MEMOIRS
OF
ADMIRAL PARRY,
THE ARCTIC NAVIGATOR.

By his Son, the Rev. E. PARRY, M.A. of Balliol College; Domestic Chaplain to the Lord Bishop of London.

Fourth Edition, with an Appendix on the proposal of Union for Prayer in behalf of the Navy.

OPINIONS OF THE PRESS.

"It is with much satisfaction we perceive that Messrs. Longmans have produced this new and cheap edition of a biography, which can never lose its interest for those who feel a pride in the achievements of Englishmen in the paths of discovery, and especially for that profession which Admiral Parry contributed so much to distinguish and adorn.... Few men have lived whose characters present more noble subjects for imitation, than that of this distinguished sailor. He was not more remarkable for energy, intelligence, and resolution, than for a spirit of deep and unaffected piety, which early developed itself, and inspired all his thoughts and governed all his actions. We cannot conceive a book better calculated to exert a healthy and abiding influence on the minds especially of the junior members of the nautical profession, than the modest volume before us. It is the record of one whose life was honourably distinguished and whose end was peace—who served his God as faithfully as he served his sovereign and his country—and who has left a name as remarkable for the strict observance of every Christian duty as for its imperishable association with the honours and rewards of Arctic discovery."

MITCHELL'S MARITIME REGISTER.

"A remarkable insight is given in these pages into the character of the man who accomplished these great enterprises of Arctic discovery.... One of the most exemplary and also attractive pictures that can be presented to the imagination or left for the guidance of youth." LITERARY GAZETTE.

"The life of Sir Edward Parry will be a valuable addition to our stores of Christian biography.... His life and death were both in keeping. He fought the good fight of faith. He had cast his anchor within the vail, and looking to Jesus as the Captain of his salvation, he possessed the true secret of happiness both for this world and for eternity." RECORD.

"Admiral Parry's life is an interesting record of successful contest with the billows of the troubled sea of life, no less than with those of the great deep. The portraiture of him here presented is that of an eminent Christian as well as of a gallant sailor." JOHN BULL.

"We have dwelt at some length on the career of Sir E. Parry, because it is one of which Englishmen have just cause to be proud, and with the details of which it is well to be familiar. For this reason too we are glad that his son has had the good taste to write the story of it briefly and simply, in a volume not too long to be read through." EXAMINER.

London: LONGMAN, BROWN, and CO., Paternoster Row.

NEW AND CHEAPER EDITION OF THE LIFE OF THE LATE COLONEL ARMINE MOUNTAIN, C.B.

Just published, in One Volume, fcp. 8vo. with a Portrait drawn on stone by R. J. Lane, A.E.R.A.

MEMOIRS AND LETTERS

OF THE LATE

COLONEL A. S. H. MOUNTAIN, C.B.

Aide-de-Camp to the Queen and Adjutant-General of Her Majesty's Forces in India.

Edited by MRS. MOUNTAIN.

Second Edition, revised and corrected.

OPINIONS OF THE PRESS.

"In this brief volume we have the story of a soldier's life, its most prominent characteristic being that it is the life of a true gentleman, who was not afraid to be known as an earnestly religious man. Apart from the interest of a character in which the mildest temper of religion blends itself with chivalrous devotion to the soldier's calling, the book is noticeable for its faithful sketches of things seen and done in the last war with China, for the (favourable) view it takes of Chinese character, and for many facts and incidents contained in it, illustrative of public history."
EXAMINER.

"Seldom have we read of a more delightful character in every relation. Religion was interfused in every thought and action, and working through a naturally amiable disposition, the result was excellence in every department. A sunny though deeply sensitive temperament (in which we may perhaps trace some impress of his French extraction, being of the family of old Montaigne), strong domestic affections, as son, brother, husband, parent; an unswerving sense of duty; an abiding consciousness of reliance on and responsibility to a higher power, and a continual spirit of self-sacrifice, contribute to form this portrait of a true gentleman and a Christian soldier."
GLOBE.

"Had we a friend in the army, we know of no book that we should be disposed to put into his hands sooner than the Life of Colonel Mountain. He held very different opinions from our own in matters religious and political; he venerated the Established Church far more than we pretend to do, but we remember he was the son of one of her bishops; he avows an ignorant horror of the Manchester school which we do not at all partake, but can easily pardon a soldier for feeling. And he has left us in these letters a very intelligent and instructive view of many Eastern questions of growing importance, whilst his character is a noble example of the Christian gentleman and soldier."
FREEMAN.

"This volume, gracefully and lovingly prepared by his widow, is a fitting tribute to the memory of a gallant soldier and a good man."
ATHENÆUM.

"This is a book for soldiers of every rank, a book to be read in every family which has relation with the army, and a model, in many respects, to be imitated by those who intend to write memoirs of their own relatives."
CHRISTIAN TIMES.

"It would be well if every young officer in the army were bound by the regulations of the service to read these Memoirs. Sure we are that in no way could he learn his duty better, or gain a clearer view of the meaning and greatness of a soldier's character. It is no wonder that an army should be invincible if it contains many such officers as Colonel Mountain."
MORNING HERALD.

"The Memoirs of Colonel Mountain ought to be read by every British officer. Other biographies may be more instructive in military details, or more attractive in records of great exploits, but we know no work that presents a better pattern and example for professional study and imitation."
LITERARY GAZETTE.

"This is a pleasing memoir of a good soldier and a good man. The charm of the volume lies in Colonel Mountain's private character, and especially in the simple, unostentatious depth of his religion. To appreciate his character, the volume must be read steadily throughout, and it will repay the trouble. Colonel Mountain writes exceedingly well, and even where he describes familiar things, he communicates the freshness of his own impressions to them."
GUARDIAN.

London: LONGMAN, BROWN, and CO., Paternoster Row.

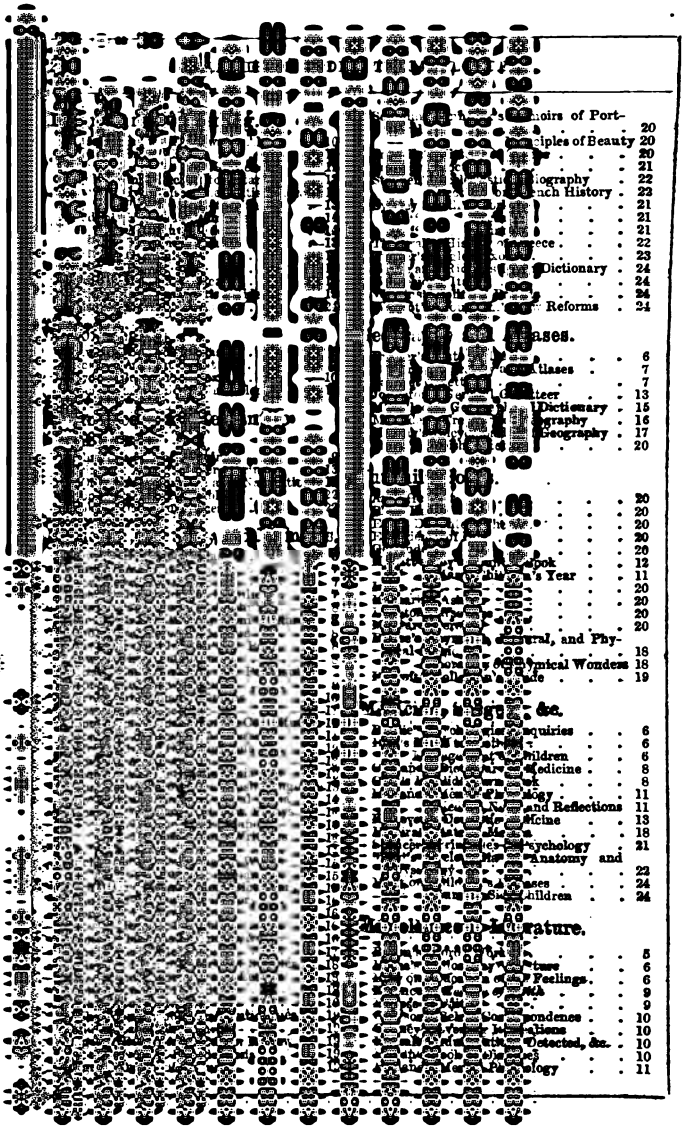
[illegible]TURE

[illegible]TS

[illegible]y . 15
[illegible] . 17
[illegible] . 18
[illegible] . 18
[illegible] Life and
[illegible] . 18
[illegible]ers . 18
[illegible] . 16
[illegible] . 20
[illegible] . 20
[illegible] . 21
[illegible] . 21
[illegible]by . 22
[illegible] . 22
[illegible] . 21
[illegible] Essays . 24

[illegible]

[illegible] . 5
[illegible] . 6
[illegible] . 7
[illegible] . 7
[illegible] . 8
[illegible]stitution 11
[illegible] . 11
[illegible] . 12
[illegible] . 12
[illegible] . 12
[illegible] . 13
[illegible] . 13
[illegible]anion . 14
[illegible]ge . 15
[illegible]ary . 15
[illegible]ary . 16
[illegible] . 15
[illegible] . 16
[illegible] . 15
[illegible] . 18
[illegible] . 18
[illegible] . 10
[illegible] . 19
[illegible]ship . 19
[illegible] . 19
[illegible] . 19
[illegible] . 20
[illegible] . 21
[illegible] . 21
[illegible] Legal
[illegible] . 21
[illegible] . 22
[illegible]il Service 23
[illegible] . 23
[illegible]dren . 24
[illegible] . 24
[illegible] . 24



...oirs of Port- ... 20
...ciples of Beauty 20
... 20
... 21
...iography 22
...ch History 22
... 21
... 21
...ece 22
... Dictionary 23
... 24
... 24
... Reforms 24

...ases.

... 6
...tiases 7
...teer 7
... Dictionary 13
...graphy 15
...Geography 16
... 17
... 20

... 20
... 20
... 20
... 20
... 20
...pok 20
...'s Year 12
... 11
... 20
... 20
... 20
...tural, and Phy- 20
...mical Wonders 18
...de 18
... 19

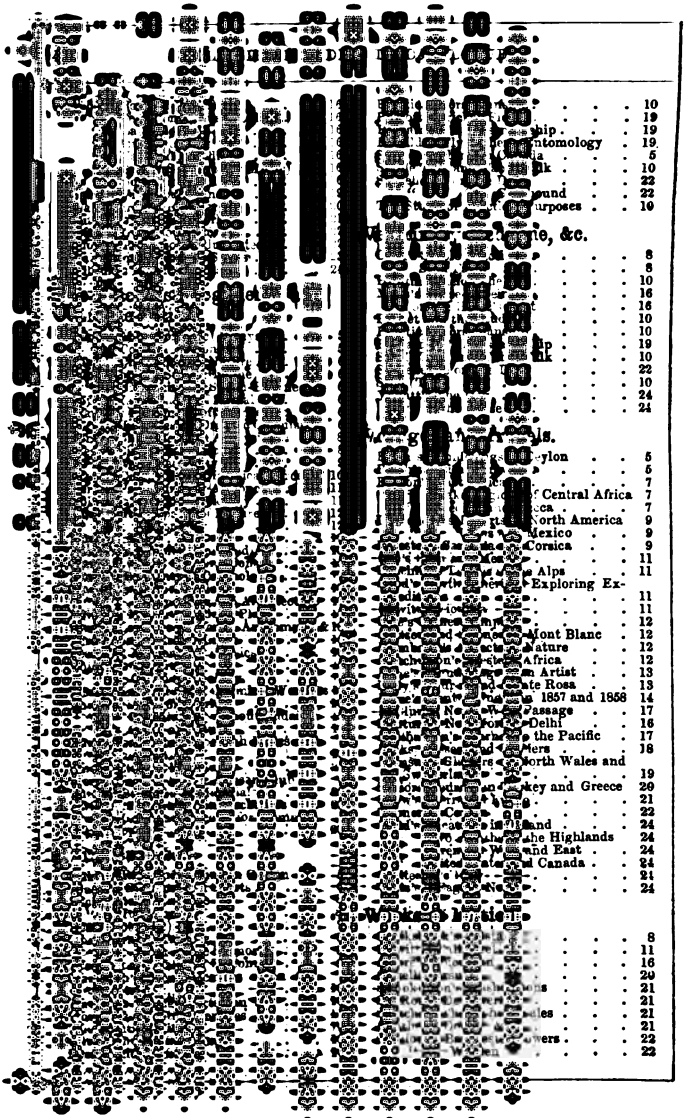
...&c.

...quiries 6
... 6
...ildren 6
...Medicine 6
... 8
...logy 6
...and Reflections 11
...cine 11
...Psychology 13
... Anatomy and 18
... 21
... 22
...ases 24
...ildren 24

...rature.

... 5
...tare 6
...Feelings 6
... 6
... 9
... 9
...ondence 10
...aliens 10
...Detected, &c. 10
... 10
...logy 10
... 11

[illegible] . . . 6
[illegible] . . . 6
[illegible] . . . 7
[illegible] . . . 7
[illegible] . . . 8
[illegible] . . . 20
[illegible] . . . 8
[illegible] . . . 8
[illegible] . . . 9
[illegible] . . . 9
[illegible] . . . 20
[illegible] . . . 9
[illegible] . . . 20
[illegible] . . . 20
[illegible] . . . 11
[illegible] . . . 11
[illegible] . . . 11
[illegible] . . . 12
[illegible] . . . 20
[illegible] . . . 12
[illegible] . . . 12
[illegible] . . . 12
[illegible] . . . 12
[illegible] . . . 13
[illegible] . . . 20
[illegible] . . . 10
[illegible] . . . 20
[illegible] . . . 7
[illegible] . . . 15
[illegible] . . . 20
[illegible] . . . 15
[illegible] . . . 15
[illegible] . . . 15
[illegible] . . . 15
[illegible] . . . 16
[illegible] . . . 17
[illegible] . . . 17
[illegible] . . . 17
[illegible] . . . 17
[illegible] . . . 17
[illegible] . . . 17
[illegible] . . . 18
[illegible] . . . 19
[illegible] . . . 20
[illegible] . . . 20
[illegible] . . . 19
[illegible] . . . 19
[illegible] . . . 20
[illegible] . . . 20
[illegible] . . . 20
[illegible] . . . 20
[illegible] . . . 21
[illegible] . . . 21
[illegible] . . . 21
[illegible] . . . 21
[illegible] . . . 22
[illegible] . . . 22
[illegible] . . . 7
[illegible] . . . 22
[illegible] . . . 5
[illegible] . . . 5
[illegible] . . . 5
[illegible] . . . 7
[illegible] . . . 9
[illegible] . . . 13
[illegible] . . . 13
[illegible] . . . 7
[illegible] . . . 14
[illegible] . . . 14
[illegible] . . . 14
[illegible] . . . 17



ALPHABETICAL CATALOGUE

of

NEW WORKS and NEW EDITIONS

PUBLISHED BY

LONGMAN, GREEN, LONGMAN, AND ROBERTS,

PATERNOSTER ROW, LONDON.

Miss Acton's Modern Cookery for Private Families, reduced to a System of Easy Practice in a Series of carefully-tested Receipts, in which the Principles of Baron Liebig and other eminent writers have been as much as possible applied and explained. Newly-revised and enlarged Edition; with 8 Plates, comprising 27 Figures, and 150 Woodcuts. Fcp. 8vo. 7s. 6d.

The Afternoon of Life. By the Author of *Morning Clouds*. New and cheaper Edition. Fcp. 8vo. 5s.

Agassiz. — An Essay on Classification [the Mutual Relation of Organised Beings]. By LOUIS AGASSIZ. 8vo. 12s.

Aikin's Select Works of the British Poets from Ben Jonson to Beattie; with Biographical and Critical Prefaces. New Edition, comprising Selections from more recent Poets. 8vo. 18s.

Alexander.—Salmon-Fishing in Canada. By a RESIDENT. Edited by Colonel Sir JAMES EDWARD ALEXANDER, K.C.L.S. Map and Woodcuts. Post 8vo. 10s. 6d.

Arago (F.)—Biographies of Distinguished Scientific Men. Translated by Admiral W. H. SMYTH, D.C.L., F.R.S., &c.; the Rev. BADEN POWELL, M.A.; and ROBERT GRANT, M.A., F.R.A.S. 8vo. 18s.

Arago's Meteorological Essays. With an Introduction by BARON HUMBOLDT. Translated under the superintendence of Lieut.-Col. E. SABINE, R.A., Treasurer and V.P.R.S. 8vo. 18s.

Arago's Popular Astronomy. Translated and edited by Admiral W. H. SMYTH, D.C.L., F.R.S.; and ROBERT GRANT, M.A., F.R.A.S. With 25 Plates and 358 Woodcuts. 2 vols. 8vo. price £2. 5s.

Arnold. — Merope, a Tragedy. By MATTHEW ARNOLD. With a Preface and an Historical Introduction. Fcp. 8vo. 5s.

Arnold.— Poems. By Matthew ARNOLD. FIRST SERIES. Third Edition. Fcp. 8vo. 5s. 6d. SECOND SERIES, price 5s.

Lord Bacon's Works. A New Edition, collected and edited by R. L. ELLIS, M.A., JAMES SPEDDING, M.A., and D. D. HEATH, Esq., Barrister-at-Law. VOLS. I. to V. comprising the Division of *Philosophical Works*; with a copious INDEX. 5 vols. 8vo. price £4. 6s. VOLS. VI. and VII. comprising the Division of *Literary and Professional Works*, with a full INDEX. 2 vols. 8vo. price £1. 16s.

Baker.—The Rifle and the Hound in Ceylon. By S. W. BAKER, Esq. New Edition, with 13 Illustrations engraved on Wood. Fcp. 8vo. 4s. 6d.

Baker. — Eight Years' Wanderings in Ceylon. By S. W. BAKER, Esq. With 6 coloured Plates. 8vo. 15s.

Barth.—Travels and Discoveries in North and Central Africa: Being the Journal of an Expedition undertaken under the auspices of Her Britannic Majesty's Government in the Years 1849—1855. By HENRY BARTH, Ph.D., D.C.L. With numerous Maps and Illustrations. 5 vols. 8vo. £5. 5s. cloth.

Bate. — Memoir of Captain W. Thornton Bate, R.N. By the Rev. JOHN BAILLIE. *New Edition*; with Portrait and 4 Illustrations. Fcp. 8vo. 5s.

Bayldon's Art of Valuing Rents and Tillages, and Claims of Tenants upon Quitting Farms, at both Michaelmas and Lady-day; as revised by Mr. DONALDSON. *Seventh Edition*, enlarged and adapted to the Present Time. By ROBERT BAKER, Land-Agent and Valuer. 8vo. price 10s. 6d.

Black's Practical Treatise on Brewing, based on Chemical and Economical Principles: With Formulæ for Public Brewers, and Instructions for Private Families. 8vo. 10s. 6d.

Blaine's Encyclopædia of Rural Sports; or, a complete Account, Historical, Practical, and Descriptive, of Hunting, Shooting, Fishing, Racing, &c. *New Edition*, revised and corrected; with above 600 Woodcut Illustrations, including 20 Subjects from Designs by JOHN LEECH. 8vo. price 42s.

Bloomfield.—The Greek Testament: with copious English Notes, Critical, Philological, and Explanatory. Especially adapted to the use of Theological Students and Ministers. By the Rev. S. T. BLOOMFIELD, D.D., F.S.A. Ninth Edition, revised. 2 vols. 8vo. with Map, £2. 8s.

Dr. Bloomfield's Critical Annotations on the New Testament, being a Supplemental Volume to the Ninth Edition. 8vo. 14s.

Dr. Bloomfield's College & School Edition of the Greek Testament: With brief English Notes, chiefly Philological and Explanatory. Seventh Edition; with Map and Index. Fcp. 8vo. 7s. 6d.

Dr. Bloomfield's College & School Lexicon to the Greek Testament. New Edition, revised. Fcp. 8vo. price 7s. 6d.

Boase.—The Philosophy of Nature: A Systematic Treatise on the Causes and Laws of Natural Phenomena. By HENRY S. BOASE, M.D., F.R.S., and G.S. 8vo. 12s.

Boyd. — A Manual for Naval Cadets. Published with the sanction and approval of the Lords Commissioners of the Admiralty. By JOHN M'NEILL BOYD, Captain, R.N. Second Edition; with 238 Illustrations (13 coloured). Fcp. 8vo. 12s. 6d.

Bourne. — A Treatise on the Steam Engine, in its Application to Mines, Mills, Steam Navigation, and Railways. By the Artisan Club. Edited by JOHN BOURNE, C.E. New and greatly improved Edition; with many Plates and Wood Engravings. 4to. [*Nearly ready.*

Bourne's Catechism of the Steam Engine in its various Applications to Mines, Mills, Steam Navigation, Railways, and Agriculture: With Practical Instructions for the Manufacture and Management of Engines of every class. With 89 Woodcuts. Fcp. 8vo. 6s.

Brande's Dictionary of Science, Literature, and Art; comprising the History, Description, and Scientific Principles of every Branch of Human Knowledge; with the Derivation and Definition of all the Terms in general use. Third Edition, revised and corrected; with numerous Woodcuts. 8vo. 60s.

Professor Brande's Lectures on Organic Chemistry, as applied to Manufactures, including Dyeing, Bleaching, Calico Printing, Sugar Manufacture, the Preservation of Wood, Tanning, &c. Edited by J. SCOFFERN, M.B. Fcp. Woodcuts, 7s. 6d.

Bray.—The Education of the Feelings. By CHARLES BRAY. Third Edition. 8vo. 5s.

Brewer.—An Atlas of History and Geography, from the Commencement of the Christian Era to the Present Time: Comprising a Series of Sixteen Coloured Maps, arranged in Chronological Order, with Illustrative Memoirs. By the Rev. J. S. BREWER, M.A. *Second Edition*, revised and corrected. Royal 8vo. 12s. 6d. half-bound.

Brialmont and Gleig's Life of Wellington. — History of the Life of Arthur Duke of Wellington: The Military Memoirs from the French of Captain BRIALMONT, with Additions and Emendations; the Political and Social Life by the Rev. G. R. GLEIG, M.A. With Maps, Plans of Battles, and Portraits. 4 vols. 8vo. £2. 14s.

Brodie. — Psychological Inquiries, in a Series of Essays intended to illustrate the Influence of the Physical Organisation on the Mental Faculties. By Sir BENJAMIN C. BRODIE, Bart. Third Edition. Fcp. 8vo. 5s.

Dr. Bull on the Maternal Management of Children in Health and Disease. New Edition. Fcp. 8vo. 5s.

Dr. Bull's Hints to Mothers on the Management of their Health during the Period of Pregnancy and in the Lying-in Room: With an Exposure of Popular Errors in connexion with those subjects, &c.; and Hints upon Nursing. New Edition. Fcp. 8vo. 5s.

Bunsen.—Christianity and Mankind, their Beginnings and Prospects. By Baron C. C. J. BUNSEN, D.D., D.C.L., D.Ph. Being a New Edition, corrected, re-modelled, and extended, of *Hippolytus and his Age*. 7 vols. 8vo. £5. 5s.—Or,

1. Hippolytus and his Age; or, the Beginnings and Prospects of Christianity. 2 vols. 8vo. £1. 10s.
2. Outline of the Philosophy of Universal History applied to Language and Religion; containing an Account of the Alphabetical Conferences. 2 vols. 32s.
3. Analecta Ante-Nicæna. 3 vols. 8vo. £2. 2s.

Bunsen. — Lyra Germanica. Translated from the German by CATHERINE WINKWORTH. FIRST SERIES, Hymns for the Sundays and Festivals of the Christian Year. SECOND SERIES, the Christian Life. Fcp. 8vo. 5s. each Series.

An Edition of the FIRST SERIES of *Lyra Germanica*, with Illustrations from Original Designs by JOHN LEIGHTON, F.S.A., engraved on Wood under his superintendence. Fcp. 4to. price 21s.

HYMNS from *Lyra Germanica*, 18mo. 1s.

*** These selections of German Hymns have been made from collections published in Germany by Baron BUNSEN; and form companion volumes to

Theologia Germanica. Translated by SUSANNA WINKWORTH. With a Preface by the Rev. CHARLES KINGSLEY; and a Letter by Baron BUNSEN. Fcp. 8vo. 5s.

Bunsen.—Egypt's Place in Universal History: An Historical Investigation, in Five Books. By Baron C. C. J. BUNSEN, D.C.L., D.Ph. Translated from the German by C. H. COTTRELL, Esq., M.A. With many Illustrations. 4 vols. 8vo. £5. 8s.

Bunting. — The Life of Jabez Bunting, D.D.: With Notices of contemporary Persons and Events. By his Son, THOMAS PERCIVAL BUNTING. VOL. I. with 2 Portraits and Vignette. *Third Thousand*, post 8vo. 7s. 6d.: or *(large paper and Proof Engravings)* square crown 8vo. 10s. 6d.

Bunyan's Pilgrim's Progress: With 126 Illustrations engraved on Steel and on Wood from Original Designs by CHARLES BENNETT; and a Preface by the Rev. CHARLES KINGSLEY, Rector of Eversley. Fcp. 4to. price 21s. cloth.

Burke.—Vicissitudes of Families. By Sir BERNARD BURKE, Ulster King of Arms. FIRST and SECOND SERIES, crown 8vo. 12s. 6d. each.

Burton.—The Lake Regions of Central Africa: A Picture of Exploration. By RICHARD F. BURTON, Captain H.M. Indian Army; Fellow and Gold Medallist of the Royal Geographical Society. With Map and numerous Illustrations. 2 vols. 8vo. 21s. 6d.

Captain Burton's First Footsteps in East Africa; or, an Exploration of Harar. With Maps and coloured Plates. 8vo. 18s.

Captain Burton's Personal Narrative of a Pilgrimage to El Medinah and Meccah. *Second Edition*, revised; with coloured Plates and Woodcuts. 2 vols. crown 8vo. 24s.

Bishop Butler's Sketch of Modern and Ancient Geography. New Edition, thoroughly revised, with such Alterations introduced as continually progressive Discoveries and the latest information have rendered necessary. Post 8vo. 7s. 6d.

Bishop Butler's General Atlas of Modern and Ancient Geography; comprising Fifty-four full-coloured Maps; with complete Indices. New Edition, enlarged, and greatly improved. Edited by the Author's Son. Royal 4to. 24s.

The Cabinet Lawyer: A Popular Digest of the Laws of England, Civil and Criminal; with a Dictionary of Law Terms, Maxims, Statutes, and Judicial Antiquities; Correct Tables of Assessed Taxes, Stamp Duties, Excise Licenses, and Post-Horse Duties; Post-Office Regulations; and Prison Discipline. 18th Edition, comprising the Public Acts of the Session 1860. Fcp. 8vo. 10s. 6d.

The Cabinet Gazetteer: A Popular Exposition of All the Countries of the World. By the Author of *The Cabinet Lawyer*. Fcp. 8vo. 10s. 6d.

Calvert. — The Wife's Manual; or, Prayers, Thoughts, and Songs on Several Occasions of a Matron's Life. By the Rev. W. CALVERT, M.A. Ornamented from Designs by the Author in the style of *Queen Elizabeth's Prayer-Book*. Crown 8vo. 10s. 6d.

Catlow's Popular Conchology; or, the Shell Cabinet arranged according to the Modern System: With a detailed Account of the Animals, and a complete Descriptive List of the Families and Genera of Recent and Fossil Shells. With 405 Woodcuts. Post 8vo. 14s.

Cats and Farlie's Book of Emblems.—Moral Emblems, with Aphorisms, Adages, and Proverbs of all Nations, from J. CATZ and R. FARLIE: comprising 60 circular Vignettes, 60 Tail-Pieces, and a Frontispiece composed from their works by J. LEIGHTON, F.S.A., and engraved on Wood. The Text translated, &c., by R. PIGOT. Imperial 8vo. 31s. 6d. cloth; or 52s. 6d. bound in morocco.

Cecil. — The Stud Farm; or, Hints on Breeding Horses for the Turf, the Chase, and the Road. Addressed to Breeders of Race-Horses and Hunters, Landed Proprietors, and Tenant Farmers. By CECIL. Fcp. 8vo. 5s.

Cecil's Stable Practice; or, Hints on Training for the Turf, the Chase, and the Road; with Observations on Racing and Hunting, Wasting, Race-Riding, and Handicapping: Addressed to all who are concerned in Racing, Steeple-Chasing, and Fox-Hunting. Second Edition. Fcp. 8vo. with Plate, 5s.

Chapman.—History of Gustavus Adolphus, and of the Thirty Years' War up to the King's Death: With some Account of its Conclusion by the Peace of Westphalia, in 1648. By B. CHAPMAN, M.A. 8vo. Plans, 12s. 6d.

Clough.—Greek History from Themistocles to Alexander, in a Series of Lives from Plutarch. Revised and arranged by A. H. CLOUGH, sometime Fellow of Oriel College, Oxford. Fcp. 8vo. with 44 Woodcuts, 6s.

Conington.—Handbook of Chemical Analysis, adapted to the Unitary System of Notation. By F. T. CONINGTON, M.A., F.C.S. Post 8vo. 7s. 6d. Also, *Tables of Qualitative Analysis*, designed as a Companion. Price 2s. 6d.

Connolly's History of the Royal Sappers and Miners: Including the Services of the Corps in the Crimea and at the Siege of Sebastopol. *Second Edition;* with 17 coloured Plates. 2 vols. 8vo. 30s.

Conybeare and Howson's Life and Epistles of Saint Paul: Comprising a complete Biography of the Apostle, and a Translation of his Epistles inserted in Chronological Order. *Third Edition*, revised and corrected; with several Maps and Woodcuts, and 4 Plates. 2 vols. square crown 8vo. 31s. 6d.

*** The Original Edition, with more numerous Illustrations, in 2 vols. 4to. price 4*l*s. may also be had.

Dr. Copland's Dictionary of Practical Medicine: Comprising General Pathology, the Nature and Treatment of Diseases, Morbid Structures, and the Disorders especially incidental to Climates, to Sex, and to the different Epochs of Life; with numerous approved Formulæ of the Medicines recommended. Now complete in 3 vols. 8vo. price £5. 11s. cloth.

Bishop Cotton's Instructions in the Doctrine and Practice of Christianity. Intended as an Introduction to Confirmation. 4th Edition. 18mo. 2s. 6d.

Cresy's Encyclopædia of Civil Engineering, Historical, Theoretical, and Practical. Illustrated by upwards of 3,000 Woodcuts. *Second Edition*, revised and extended. 8vo. 63s.

Crosse. — Memorials, Scientific and Literary, of Andrew Crosse, the Electrician. Edited by Mrs. CROSSE. Post 8vo. 9s. 6d.

Crowe.—The History of France. By EYRE EVANS CROWE. In Five Volumes. VOL. I. 8vo. 14s.; VOL. II. 15s.

Cruikshank. — The Life of Sir John Falstaff, illustrated in a Series of Twenty-four original Etchings by George Cruikshank. Accompanied by an Imaginary Biography, by ROBERT B. BROUGH. Royal 8vo. 12s. 6d. cloth.

Lady Cust's Invalid's Own Book: A Collection of Recipes from various Books and various Countries. Fcp. 8vo. 2s. 6d.

The Rev. Canon Dale's Domestic Liturgy and Family Chaplain, in Two Parts: PART I. Church Services adapted for Domestic Use, with Prayers for Every Day of the Week, selected from the Book of Common Prayer; PART II. an appropriate Sermon for Every Sunday in the Year. Post 4to. 21s. cloth; 31s. 6d. calf; or 50s. morocco.

Separately { THE FAMILY CHAPLAIN, 12s. / THE DOMESTIC LITURGY, 10s. 6d.

The Dead Shot; or, Sportsman's Complete Guide; being a Treatise on the Use of the Gun, with Rudimentary and Finishing Lessons in the Art of Shooting Game of all kinds; Dog-breaking, Pigeon-shooting, &c. By MARKSMAN. Fcp. 8vo. with 6 Illustrations, 5s.

De la Rive's Treatise on Electricity in Theory and Practice. Translated for the Author by C. V. WALKER, F.R.S. 3 vols. 8vo. Woodcuts, £3. 13s.

Domenech.—Seven Years' Residence in the Great Deserts of North America. By the ABBÉ DOMENECH. With a Map, and about Sixty Illustrations. 2 vols. 8vo. £1. 16s.

Abbé Domenech's Missionary Adventures in Texas and Mexico: A Personal Narrative of Six Years' Sojourn in those Regions. 8vo. 10s. 6d.

The Eclipse of Faith; or, a Visit to a Religious Sceptic. *10th Edition.* Fcp. 8vo. 5s.

Defence of The Eclipse of Faith, by its Author. *3d Edition,* revised. Fcp. 8vo. 3s. 6d.

Ephemera's Handbook of Angling; teaching Fly-fishing, Trolling, Bottom-Fishing, Salmon-Fishing: With the Natural History of River-Fish, and the best Modes of Catching them. With Woodcuts. Fcp. 8vo. 5s.

Ephemera's Book of the Salmon: The Theory, Principles, and Practice of Fly-Fishing for Salmon; Lists of good Salmon Flies for every good River in the Empire; the Natural History of the Salmon, its Habits described, and the best way of artificially Breeding it. Fcp. 8vo. with coloured Plates, 14s.

Fairbairn.—A Treatise on Mills and Millwork. By WILLIAM FAIRBAIRN, F.R.S., F.G.S. With numerous Illustrations. 2 vols. 8vo. *[In the press.*

Fairbairn.—Useful Information for Engineers: A First Series of Lectures delivered to the Working Engineers of Yorkshire and Lancashire. By WILLIAM FAIRBAIRN, F.R.S., F.G.S. *Third Edition;* with Plates and Woodcuts. Crown 8vo. 10s. 6d.

SECOND SERIES of FAIRBAIRN'S Useful Information for Engineers, uniform with the above, nearly ready.

Falkener.—Dædalus; or, the Causes and Principles of the Excellence of Greek Sculpture. By EDWARD FALKENER, Member of the Archæological Institutes of Rome and Berlin. With numerous Illustrations and 2 Medallions from the Antique. Royal 8vo. 42s.

Falkener.—Museum of Classical Antiquities: A Series of Thirty-five Essays on Ancient Art, by various Writers, edited by EDWARD FALKENER. With 25 Plates and many Woodcuts. Imperial 8vo. 42s.

Forester's Rambles in the Islands of Corsica and Sardinia: With Notices of their History, Antiquities, and present Condition. With coloured Map; and numerous Illustrations from Drawings by Lieut.-Col. M. A. Biddulph, R.A. Imperial 8vo. 28s.

Letters of Sir A. S. Fraser, K.C.B. Commanding the Royal Horse Artillery under the Duke of Wellington: Written during the Peninsular and Waterloo Campaigns. Edited by MAJOR-GENERAL SABINE, R.A. With Portrait, 2 Maps, and Plans. 8vo. 18s.

Freeman and Salvin.—Falconry: Its Claims, History, and Practice. By the Rev. G. E. FREEMAN, M.A. ("Peregrine" of the *Field*); and Captain F. H. SALVIN. Post 8vo. with Woodcut Illustrations from Drawings by Wolf, price 10s. 6d. cloth.

Garratt.—Marvels and Mysteries of Instinct; or, Curiosities of Animal Life. By GEORGE GARRATT. *Second Edition,* improved. Fcp. 8vo. 4s. 6d.

Gilbart's Logic of Banking: A Familiar Exposition of the Principles of Reasoning, and their Application to the Art and the Science of Banking. 12mo. with Portrait, 12s. 6d.

The Poetical Works of Oliver Goldsmith. Edited by BOLTON CORNEY, Esq. Illustrated by Wood Engravings, from Designs by Members of the Etching Club. Square crown 8vo. cloth, 21s.; morocco, £1. 16s.

Goodeve.—The Elements of Mechanism, designed for Students of Applied Mechanics. By T. M. GOODEVE, M.A., Professor of Natural Philosophy in King's College. Post 8vo. with 206 Figures, 6s. 6d.

Gosse.—A Naturalist's Sojourn in Jamaica. By P. H. Gosse, Esq. With Plates. Post 8vo. 14s.

Green.—Lives of the Princesses of England. By Mrs. Mary Anne Everett Green, Editor of the *Letters of Royal and Illustrious Ladies*. With numerous Portraits. Complete in 6 vols. post 8vo. 10s. 6d. each.

Greyson.—Selections from the Correspondence of R. E. Greyson, Esq. Edited by the Author of *The Eclipse of Faith*. New Edition. Crown 8vo. 7s. 6d.

Grove.—The Correlation of Physical Forces. By W. R. Grove, Q.C., M.A. *Third Edition*. 8vo. 7s.

Gurney.—St. Louis and Henri IV.: Being a Second Series of Historical Sketches. By the Rev. John H. Gurney, M.A. Fcp. 8vo. 6s.

Evening Recreations; or, Samples from the Lecture-Room. Edited by Rev. J. H. Gurney. Crown 8vo. 5s.

Gwilt's Encyclopædia of Architecture, Historical, Theoretical, and Practical. By Joseph Gwilt. With more than 1,000 Wood Engravings, from Designs by J. S. Gwilt. 8vo. 42s.

Hamilton.—Reminiscences of an Old Sportsman. By Colonel J. M. Hamilton, K.H., Author of *Travels in the Interior of Columbia*. 2 vols. post 8vo. with 6 Illustrations, 18s.

Hare (Archdeacon).—The Life of Luther, in Forty-eight Historical Engravings. By Gustav König. With Explanations by Archdeacon Hare and Susannah Winkworth. Fcp. 4to. 28s.

Harford.—Life of Michael Angelo Buonarroti: With Translations of many of his Poems and Letters; also Memoirs of Savonarola, Raphael, and Vittoria Colonna. By John S. Harford, Esq., D.C.L., F.R.S. Second Edition, revised; with 20 Plates. 2 vols. 8vo. 25s.

Illustrations, Architectural and Pictorial, of the Genius of Michael Angelo Buonarroti. With Descriptions of the Plates, by the Commendatore Canina; C. R. Cockerell, Esq., R.A.; and J. S. Harford, Esq., D.C.L., F.R.S. Folio, 73s. 6d. half-bound.

Harry Hieover's Stable Talk and Table Talk; or, Spectacles for Young Sportsmen. New Edition, 2 vols. 8vo. Portrait, 24s.

Harry Hieover.—The Hunting-Field. By Harry Hieover. *2d Edition*; with 2 Plates. Fcp. 8vo. 5s.

Harry Hieover. — Practical Horsemanship. *Second Edition*; with 2 Plates. Fcp. 8vo. 5s. half-bound.

Harry Hieover.—The Pocket and the Stud; or, Practical Hints on the Management of the Stable. *3d Edition*. Fcp. 8vo. with Portrait, 5s.

Harry Hieover.—The Stud, for Practical Purposes and Practical Men: Being a Guide to the Choice of a Horse. *2d Edition*, with 2 Plates. Fcp. 5s.

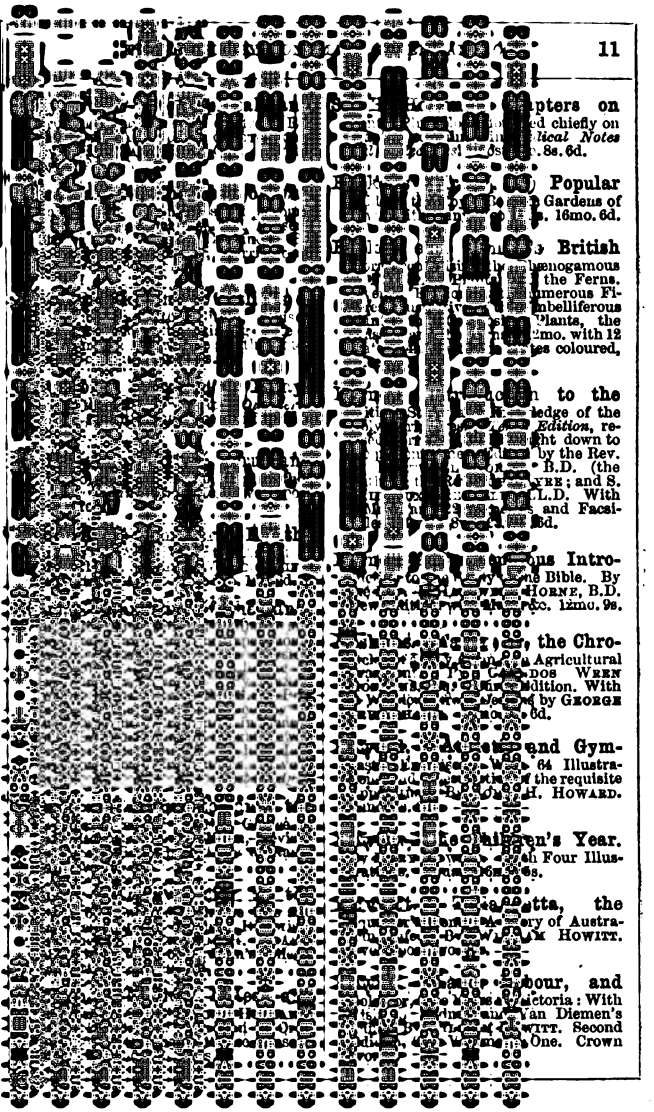
Hartwig. — The Sea and its Living Wonders. By Dr. George Hartwig. With numerous Wood Engravings, and a new series of Illustrations in Chromo-xylography from original designs by Henry Noel Humphreys. 8vo. 18s.

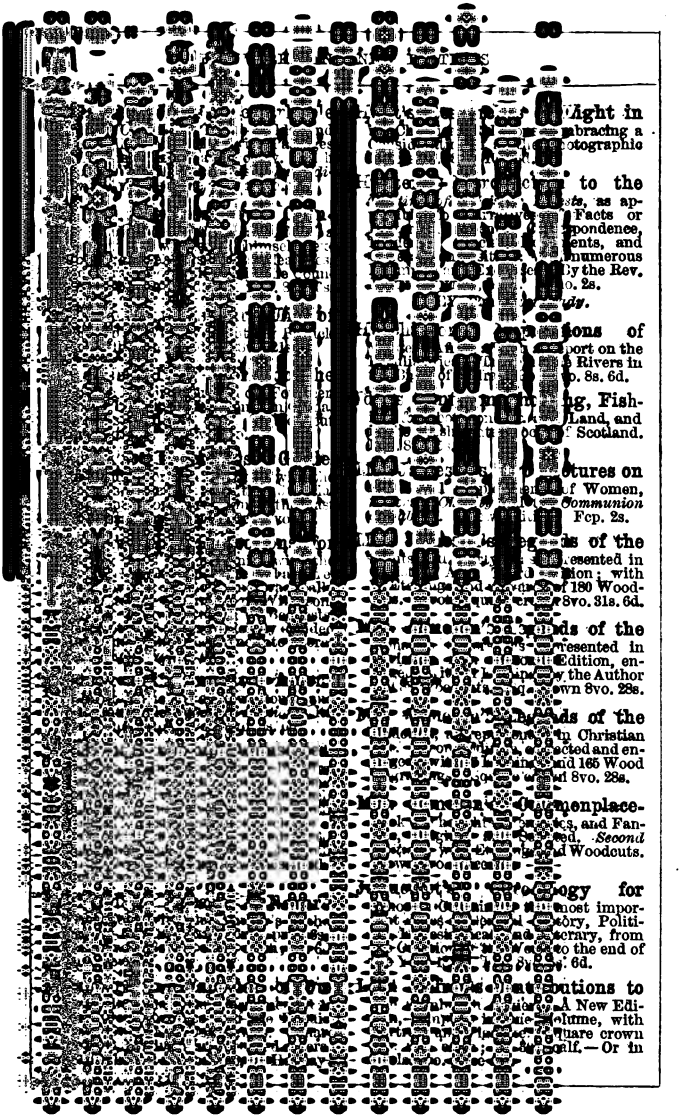
Hassall.—Adulterations Detected; or, Plain Instructions for the Discovery of Frauds in Food and Medicine. By Arthur Hill Hassall, M.D. Lond., Analyst of *The Lancet* Sanitary Commission, and Author of the Reports of that Commission published under the title of *Food and its Adulterations* (which may also be had, in 8vo. price 28s.) With 225 Illustrations, engraved on Wood. Crown 8vo. 17s. 6d.

Dr. Hassall's History of the British Freshwater Algæ: Including Descriptions of the Desmideæ and Diatomaceæ. 2 vols. 8vo. with 103 Plates, £1. 15s.

Col. Hawker's Instructions to Young Sportsmen in all that relates to Guns and Shooting. 11th Edition, revised by the Author's Son, Major P. W. L. Hawker. With Portrait, Plates, and Woodcuts. Sq. crown 8vo. 18s.

Haydn's Book of Dignities: Containing Rolls of the Official Personages of the British Empire, Civil, Ecclesiastical, Judicial, Military, Naval, and Municipal, from the Earliest Periods to the Present Time. Together with the Sovereigns of Europe, from the Foundation of their respective States; the Peerage and Nobility of Great Britain, &c. 8vo. 25s.





Bishop Jeremy Taylor's Entire Works: With Life by Bishop HEBER. Revised and corrected by the Rev. C. P. EDEN. Now complete in 10 vols. 8vo. price 10s./6d. each.

Kane's Wanderings of an Artist among the Indians of North America; from Canada to Vancouver's Island and Oregon, through the Hudson's Bay Company's Territory, and back again. With Map, Illustrations in Colours, and Wood Engravings. 8vo. 21s.

Kemble. — The Saxons in England: A History of the English Commonwealth till the Conquest. By J. M. KEMBLE, M.A. 2 vols. 8vo. 28s.

Keith Johnston's Dictionary of Geography, Descriptive, Physical, Statistical, and Historical: Forming a complete General Gazetteer of the World. *Third Edition*, revised to April 1860. In 1 vol. of 1,360 pages, comprising about 56,000 Names of Places, 8vo. 30s. cloth; or half-bound in russia, 35s.

Kesteven. — A Manual of the Domestic Practice of Medicine. By W. B. KESTEVEN, F.R.C.S.E., &c. Square post 8vo. 7s. 6d.

Kirby and Spence's Introduction to Entomology; or, Elements of the Natural History of Insects: Comprising an Account of Noxious and Useful Insects, of their Metamorphoses, Food, Stratagems, Habitations, Societies, Motions, Noises, Hybernation, Instinct, &c. *Seventh Edition*, with an Appendix relative to the Origin and Progress of the work. Crown 8vo. 5s.

A Lady's Tour round Monte Rosa; with Visits to the Italian Valleys of Anzasca, Mastalone, Camasco, Sesia, Lys, Challant, Aosta, and Co. ne. With Map, 4 Illustrations from Sketches by Mr. G. Barnard, and 8 Woodcuts. Post 8vo. 14s.

Lardner's Cabinet Cyclopædia of History, Biography, Literature, the Arts and Sciences, Natural History, and Manufactures. A Series of Original Works by EMINENT WRITERS. Complete in 132 vols. fcp. 8vo. with Vignette Titles, price £19. 19s. cloth lettered.

The Works *separately*, in single Volumes or Sets, price 3s. 6d. each Volume, cloth lettered.

Latham. — The English Language. By R. G. LATHAM, M.A., M.D., F.R.S., late Professor of the English Language in University College, London. Fourth Edition. 2 vols. 8vo. 28s.

Dr. Latham's Handbook of the English Language for the Use of Students of the Universities and Higher Classes of Schools. *Third Edition*. Post 8vo. 7s. 6d.

Mrs. R. Lee's Elements of Natural History; or, First Principles of Zoology: Comprising the Principles of Classification, interspersed with amusing and instructive Accounts of the most remarkable Animals. New Edition; Woodcuts. Fcp. 8vo. 7s. 6d.

L.E.L. — The Poetical Works of Letitia Elizabeth Landon; comprising the *Improvisatrice*, the *Venetian Bracelet*, the *Golden Violet*, the *Troubadour*, and Poetical Remains. 2 vols. 16mo. 10s. cloth; morocco, 21s.

Dr. John Lindley's Theory and Practice of Horticulture; or, an Attempt to explain the principal Operations of Gardening upon Physiological Grounds. With 98 Woodcuts. 8vo. 21s.

Dr. John Lindley's Introduction to Botany. New Edition, with corrections and copious Additions. 2 vols. 8vo. with Plates and Woodcuts, 24s.

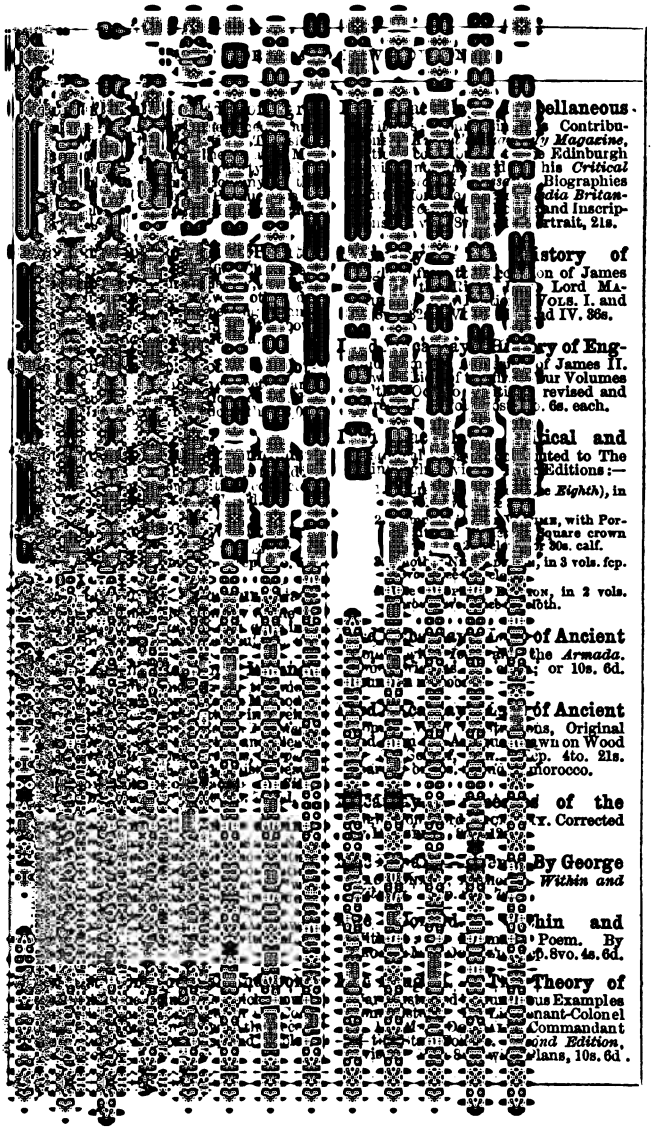
Dr. Lindley's Synopsis of the British Flora arranged according to the Natural Orders; containing Vasculares or Flowering Plants. Fcp. 8vo. 6s.

Linwood's Anthologia Oxoni- ensis, sive Florilegium e Lusibus poeticis diversorum Oxoniensium Græcis et Latinis decerptum. 8vo. 14s.

Lorimer's Letters to a Young Master Mariner on some Subjects connected with his Calling. Fcp. 8vo. price 5 s. 6d.

Loudon's Encyclopædia of Gar- dening: Comprising the Theory and Practice of Horticulture, Floriculture, Arboriculture, and Landscape-Gardening. With 1,000 Woodcuts. 8vo. 31s. 6d.

Loudon's Encyclopædia of Trees and Shrubs, or *Arboretum et Fruticetum Britannicum* abridged: Containing the Hardy Trees and Shrubs of Great Britain, Native and Foreign, Scientifically and Popularly Described. With about 2,000 Woodcuts. 8vo. 50s.



Mac Dougall. — The Campaigns of Hannibal, arranged and critically considered, expressly for the use of Students of Military History. By Lt.-Col. P. L. MAC DOUGALL. Post 8vo. 7s. 6d.

Sir James Mackintosh's Miscellaneous Works: Including his Contributions to the Edinburgh Review. Square crown 8vo. 21s. cloth; or 30s. bound in calf: or in 3 vols. fcp. 8vo. 21s.

Sir James Mackintosh's History of England from the Earliest Times to the final Establishment of the Reformation. 2 vols. 8vo. 21s.

M'Culloch's Dictionary, Practical, Theoretical, and Historical, of Commerce, and Commercial Navigation. Illustrated with Maps and Plans. New Edition. 8vo. price 50s. cloth; or 55s. half-russia. SUPPLEMENT to the Edition published in 1859, containing the late Commercial Treaty with France, the New Indian Tariff, &c. price 2s. 6d.

M'Culloch's Dictionary, Geographical, Statistical, and Historical, of the various Countries, Places, and principal Natural Objects in the World. With 6 Maps. 2 vols. 8vo. 63s.

Maguire. — Rome; its Ruler and its Institutions. By JOHN FRANCIS MAGUIRE, M.P. *Second Edition*, enlarged. Post 8vo. 10s. 6d.

Mrs. Marcet's Conversations on Natural Philosophy, in which the Elements of that Science are familiarly explained. With 34 Plates. Fcp. 8vo. price 10s. 6d.

Mrs. Marcet's Conversations on Chemistry, in which the Elements of that Science are familiarly explained and illustrated. 2 vols. fcp. 8vo. 14s.

Marshman's Life of General Havelock.—Memoirs of Major-General Sir Henry Havelock, K.C.B. By JOHN CLARK MARSHMAN. With Portrait, Map, and 2 Plans. 8vo. 12s. 6d.

Marshman.—The Life and Times of Carey, Marshman, and Ward: Embracing the History of the Serampore Mission. By JOHN CLARK MARSHMAN. 2 vols. 8vo. 25s.

Martineau. — Studies of Christianity: A Series of Original Papers, now first collected, or New. By JAMES MARTINEAU. Crown 8vo. 7s. 6d.

Martineau. — Endeavours after the Christian Life: Discourses. By JAMES MARTINEAU. 2 vols. post 8vo. price 7s. 6d. each.

Martineau. — Hymns for the Christian Church and Home. Collected and edited by JAMES MARTINEAU. *Eleventh Edition*, 12mo. 3s. 6d. cloth, or 5s. calf; *Fifth Edition*, 32mo. 1s. 4d. cloth, or 1s. 8d. roan; an Edition in 18mo. price 2s. 10d. cloth.

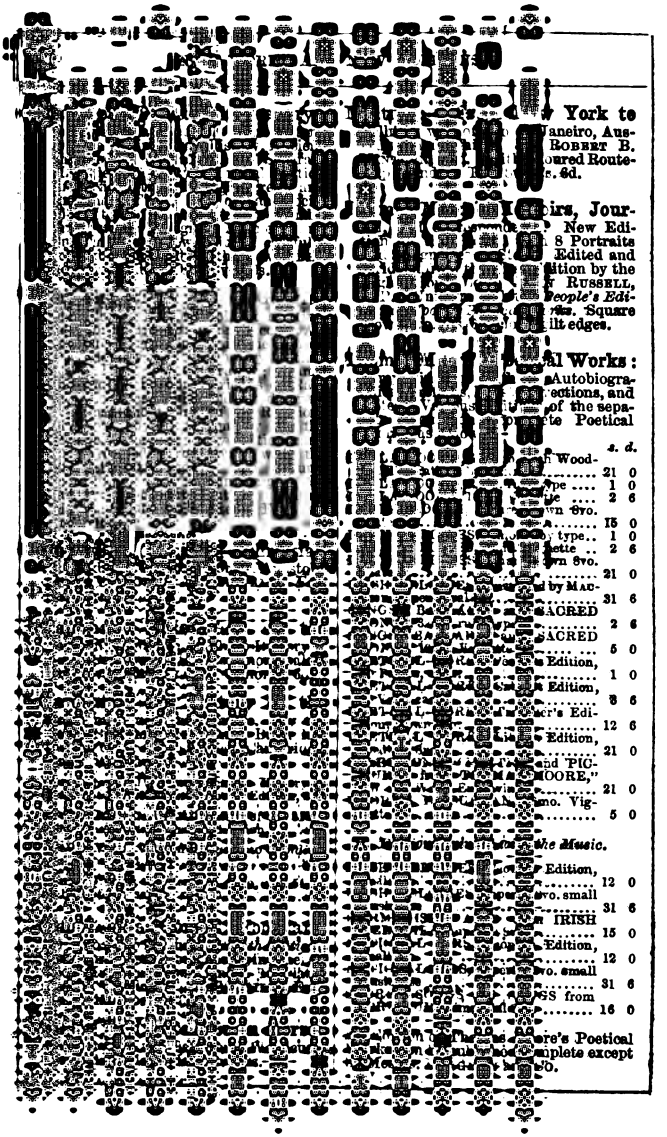
Martineau.—Miscellanies: Comprising Essays chiefly religious and controversial. By JAMES MARTINEAU. Crown 8vo. 9s.

Maunder's Scientific and Literary Treasury: A new and popular Encyclopædia of Science and the Belles-Lettres; including all Branches of Science, and every subject connected with Literature and Art. Thoroughly revised Edition, with Corrections and Additions. Fcp. 8vo. 10s.

Maunder's Biographical Treasury; consisting of Memoirs, Sketches, and brief Notices of above 12,000 Eminent Persons of All Ages and Nations, from the Earliest Period of History: Forming a complete Dictionary of Universal Biography. *Eleventh Edition*, corrected and extended. Fcp. 8vo. 10s.

Maunder's Treasury of Knowledge and Library of Reference: Comprising an English Dictionary and Grammar, a Universal Gazetteer, a Classical Dictionary, a Chronology, a Law Dictionary, a Synopsis of the Peerage, numerous useful Tables, &c. New Edition, reconstructed by B. B. WOODWARD, B.A.; assisted by J. MORRIS, Solicitor, and W. HUGHES, F.R.G.S. Fcp. 8vo. 10s.

Maunder's Treasury of Natural History; or, a Popular Dictionary of Animated Nature: In which the Zoological Characteristics that distinguish the different Classes, Genera, and Species, are combined with a variety of interesting Information illustrative of the Habits, Instincts, and General Economy of the Animal Kingdom. With 900 Woodcuts. Fcp. 10s.



York to

aneiro, Aus-
ROBERT B.
oured Route-
s. 6d.

irs, Jour-

New Edi-
8 Portraits
Edited and
ition by the
RUSSELL,
People's Edi-
s. Square
lt edges.

al Works:

Autobiogra-
ections, and
of the sepa-
te Poetical

	s.	*d.*
Wood-		
	21	0
pe	1	0
pe	2	6
wn 8vo.		
	15	0
type..	1	0
ette ..	2	6
wn 8vo.		
	21	0
d by MAC-		
	31	6
SACRED		
	2	6
SACRED		
	5	0
Edition,		
	1	0
Edition,		
	3	6
er's Edi-		
	12	6
Edition,		
	21	0
and 'PIC-		
MOORE,"		
	21	0
mo. Vig-		
	5	0

the Music.

Edition,		
	12	0
vo. small		
	31	6
IRISH		
	15	0
Edition,		
	12	0
vo. small		
	31	6
SS from		
	16	0

are's Poetical
mplete except
o.

Mollhausen's Diary of a Journey from the Mississippi to the Coasts of the Pacific, with a United States Government Expedition. With an Introduction by Baron HUMBOLDT; Map and Illustrations. 2 vols. 8vo. 30s.

Moore.—The Power of the Soul over the Body, considered in relation to Health and Morals. By GEORGE MOORE, M.D. Fcp. 8vo. 6s.

Moore.—The Use of the Body in relation to the Mind. By G. MOORE, M.D. Fcp. 8vo. 6s.

Moore.—Man and his Motives. By GEORGE MOORE, M.D. Fcp. 8vo. 6s.

James Montgomery's Poetical Works: Collective Edition; with the Author's Autobiographical Prefaces, complete in One Volume; with Portrait and Vignette. Square crown 8vo. 10s. 6d. cloth; morocco, 21s.—Or, in 4 vols. fcp. 8vo. with Plates, 14s.

Morell. — Elements of Psychology: PART I., containing the Analysis of the Intellectual Powers. By J. D. MORELL, M.A., One of Her Majesty's Inspectors of Schools. Post 8vo. 7s. 6d.

Morning Clouds. By the Author of *The Afternoon of Life*. Second Edition, revised throughout. Fcp. 8vo. 5s.

Morton's Agricultural Handbooks. — Handbook of Dairy Husbandry: Comprising Dairy Statistics; Food of the Cow; Milk; Butter; Cheese; General Management; Calendar of Daily Dairy Operations; Appendix on Cheese-making; and Index. By JOHN CHALMERS MORTON. 16mo. 1s. 6d.

HANDBOOK of FARM LABOUR, Steam, Horse, and Water Power, *nearly ready*.

Morton.—The Resources of Estates: A Treatise on the Agricultural Improvement and General Management of Landed Property. By JOHN LOCKHART MORTON. With 25 Lithographic Illustrations. Royal 8vo. 31s. 6d.

Moseley.—Astro-Theology. By the Rev. HENRY MOSELEY, M.A., F.R.S., Chaplain in Ordinary to the Queen, &c. Fcp. 8vo. 4s. 6d.

Moseley's Mechanical Principles of Engineering and Architecture. Second Edition, enlarged; with numerous Woodcuts. 8vo. 24s.

Memoirs and Letters of the late Colonel ARMINE MOUNTAIN, Adjutant-General of H. M. Forces in India. Edited by Mrs. MOUNTAIN. Second Edition, Portrait. Fcp. 8vo. 6s.

Mure.—A Critical History of the Language and Literature of Ancient Greece. By WILLIAM MURE, of Caldwell. VOLS. I. to III. 8vo. price 36s.; VOL. IV. 15s.; and VOL. V. 18s.

Murray's Encyclopædia of Geography, comprising a complete Description of the Earth: Exhibiting its Relation to the Heavenly Bodies, its Physical Structure, the Natural History of each Country, and the Industry, Commerce, Political Institutions, and Civil and Social State of All Nations. Second Edition; with 82 Maps, and upwards of 1,000 other Woodcuts. 8vo. 60s.

Neale.—The Closing Scene; or, Christianity and Infidelity contrasted in the Last Hours of Remarkable Persons. By the Rev. ERSKINE NEALE, M.A. 2 vols. fcp. 8vo. 6s. each.

Newman. — The Scope and Nature of University Education. By JOHN HENRY NEWMAN, D.D., of the Oratory. Second Edition. Fcp. 8vo. 6s.

By the same Author, fcp. 8vo. 6s. each,

LECTURES and ESSAYS on UNIVERSITY SUBJECTS.

The OFFICE and WORK of UNIVERSITIES.

Ogilvie.—The Master-Builder's Plan; or, the Principles of Organic Architecture as indicated in the Typical Forms of Animals. By GEORGE OGILVIE, M.D. Post 8vo. with 72 Woodcuts, price 6s. 6d.

Osborn.—The Discovery of the North-West Passage by H.M.S. *Investigator*, Captain R. M'CLURE, 1850-1854. Edited by Captain SHERARD OSBORN, C.B. Third Edition; with Portrait, Chart, and Illustrations. 8vo. 15s.

Professor Owen's Lectures on the Comparative Anatomy and Physiology of the Invertebrate Animals. Second Edition, with 235 Woodcuts. 8vo. 21s.

Professor Owen's Lectures on the Comparative Anatomy and Physiology of the Vertebrate Animals. VOL. I. 8vo. 14s.

Palleske's Life of Schiller. Translated by LADY WALLACE. Dedicated by permission to Her Majesty the Queen. 2 vols. post 8vo. with 2 Portraits, 24s.

Memoirs of Admiral Parry, the Arctic Navigator. By his Son, the Rev. E. PARRY, M.A. Seventh Edition; with a Portrait and coloured Chart of the North-West Passage. Fcp. 8vo. 5s.

Peaks, Passes, and Glaciers: a Series of Excursions by Members of the Alpine Club. Edited by JOHN BALL, M.R.I.A., F.L.S., President. Traveller's Edition (the *Fifth*), comprising all the Mountain Expeditions and the Maps, printed in a condensed form for the Pocket or Knapsack. 16mo. 5s. 6d.

The Fourth Edition of *Peaks, Passes, and Glaciers*, with 8 coloured Illustrations and many Woodcuts, may still be had, price 21s. Also the EIGHT SWISS MAPS, accompanied by a Table of the HEIGHTS of MOUNTAINS, 3s. 6d.

Peel.—Sketch of the Life and Character of Sir Robert Peel, Bart. By the Right Hon. Sir LAWRENCE PEEL. Post 8vo. 8s. 6d.

Dr. Pereira's Elements of Mate- ria Medica and Therapeutics. *Third Edition*, enlarged and improved from the Author's Materials by A. S. TAYLOR, M.D., and G. O. REES, M.D. Vol. I. 8vo. 28s.; Vol. II. Part I. 21s.; Vol. II. Part II. 26s.

Dr. Pereira's Lectures on Polar- ised Light, together with a Lecture on the Microscope. 2d Edition, enlarged from the Author's Materials by Rev. B. POWELL, M.A. Fcp. 8vo. Woodcuts, price 7s.

Peschel's Elements of Physics. Translated from the German, with Notes, by E. WEST. With Diagrams and Woodcuts. 3 vols. fcp. 8vo. 21s.

Phillips's Elementary Introduc- tion to Mineralogy. A New Edition, with extensive Alterations and Additions, by H. J. BROOKE, F.R.S., F.G.S.; and W. H. MILLER, M.A., F.G.S. With numerous Woodcuts. Post 8vo. 18s.

Phillips.—A Guide to Geology. By JOHN PHILLIPS, M.A., F.R.S., F.G.S., &c. Fourth Edition, corrected; with 4 Plates. Fcp. 8vo. 5s.

Piesse's Laboratory of Chymical Wonders: A Scientific Mélange intended for the Instruction and Entertainment of Young People. Fcp. 8vo. with Illustrations. [*Just ready.*

Piesse's Chymical, Natural, and Physical Magic, for the Instruction and Entertainment of Juveniles during the Holiday Vacation: with 30 Woodcuts and Portrait. Fcp. 8vo. 3s. 6d.

Piesse's Art of Perfumery, and Methods of Obtaining the Odours of Plants; with Instructions for the Manufacture of Perfumes for the Handkerchief, Scented Powders, Odorous Vinegars, Dentifrices, Pomatums, Cosmétiques, Perfumed Soap, &c.; and an Appendix on the Colours of Flowers, Artificial Fruit Essences, &c. *Second Edition;* Woodcuts. Crown 8vo. 8s. 6d.

Piozzi.—Autobiography, Letters, and Literary Remains of Mrs. Piozzi (Thrale), Author of *Anecdotes of Dr. Johnson*. Edited, with Notes and some account of her Life and Writings, by A. HAYWARD, Esq., Q.C. With a Portrait of Mrs. Piozzi, and an engraving from a Picture by Hogarth.

Pitt.—How to Brew Good Beer: A complete Guide to the Art of Brewing Ale, Bitter Ale, Table Ale, Brown Stout, Porter, and Table Beer. To which are added Practical Instructions for Making Malt. By JOHN PITT. Fcp. 8vo. 4s. 6d.

Porter.—History of the Knights of Malta, or the Order of the Hospital of St. John of Jerusalem. By Major WHITWORTH PORTER, R.E. With 5 Illustrations. 2 vols. 8vo. 24s.

Powell.—Essays on the Spirit of the Inductive Philosophy, the Unity of Worlds, and the Philosophy of Creation. By the Rev. BADEN POWELL, M.A., &c. Crown 8vo. Woodcuts, 12s. 6d.

Powell. — Christianity without Judaism: A Second Series of Essays on the Unity of Worlds and of Nature. By the Rev. BADEN POWELL, M.A., &c. Crown 8vo. 7s. 6d.

Powell.—The Order of Nature considered in reference to the Claims of Revelation: A Third Series of Essays on the Unity of Worlds and of Nature. By the Rev. BADEN POWELL, M.A. Crown 8vo. 12s.

Power.—Virginia's Hand: a Poem. By MARGUERITE A. POWER. Fcp. 8vo. 5s.

Pycroft.—The Collegian's Guide; or, Recollections of College Days: Setting forth the Advantages and Temptations of a University Education. By the Rev. J. PYCROFT, B.A. Fcp. 8vo. 6s.

Pycroft's Course of English Reading; or, How and What to Read: Adapted to every taste and capacity. With Literary Anecdotes. Fcp. 8vo. 5s.

Pycroft's Cricket-Field; or, the Science and History of the Game of Cricket. Third Edition; Plates and Woodcuts. Fcp. 8vo. 5s.

Quatrefages' Rambles of a Naturalist on the Coasts of France, Spain, and Sicily. Translated by E. C. OTTE'. 2 vols. post 8vo. 15s.

Thomas Raikes's Journal from 1831 to 1847: Comprising Reminiscences of Social and Political Life in London and Paris during that period. New Edition, complete in 2 vols. crown 8vo. price 12s.

Ramsay.—The Old Glaciers of North Wales and Switzerland. By A. C. RAMSAY, F.R.S. and G.S. With Map and 14 Woodcuts. Fcp. 8vo. price 4s. 6d.

Rich's Dictionary of Roman and Greek Antiquities, with nearly 2,000 Woodcuts representing Objects from the Antique. Forming an Illustrated Companion to the Latin Dictionary and Greek Lexicon. Second and cheaper Edition. Post 8vo. 12s. 6d.

Horsemanship; or, the Art of Riding and Managing a Horse, adapted to the Guidance of Ladies and Gentlemen on the Road and in the Field: With Instructions for Breaking-in Colts and Young Horses. By Captain RICHARDSON, late of the 6th Light Dragoons. With 5 Plates. Square crown 8vo. 14s.

Riddle's Household Prayers for Four Weeks: With additional Prayers for Special Occasions. To which is appended a Course of Scripture Reading for Every Day in the Year. Second Edition. Crown 8vo. 3s. 6d.

Riddle's Complete Latin-English and English-Latin Dictionary, for the use of Colleges and Schools. *New Edition*, revised and corrected. 8vo. 21s.

Riddle's Diamond Latin-English Dictionary. A Guide to the Meaning, Quality, and right Accentuation of Latin Classical Words. Royal 32mo. 4s.

Riddle's Copious and Critical Latin-English Lexicon, founded on the German-Latin Dictionaries of Dr. William Freund. Post 4to. 31s. 6d.

Rivers's Rose-Amateur's Guide; containing ample Descriptions of all the fine leading variety of Roses, regularly classed in their respective Families; their History and Mode of Culture. Sixth Edition. Fcp. 8vo. 3s. 6d.

Dr. E. Robinson's Greek and English Lexicon to the Greek Testament. A New Edition, revised and in great part re-written. 8vo. 18s.

Mr. Henry Rogers's Essays selected from Contributions to the *Edinburgh Review*. Second Edition, with Additions. 2 vols. fcp. 8vo. 21s.

Samuel Rogers's Recollections of Personal and Conversational Intercourse with Fox, Burke, Grattan, Person, Horne Tooke, Talleyrand, Erskine, Scott, Lord Grenville, *and* the Duke of Wellington. *Second Edition*. Fcp. 8vo. 5s.

Dr. Roget's Thesaurus of Eng-lish Words and Phrases classified and arranged so as to facilitate the Expression of Ideas and assist in Literary Composition. Ninth Edition, revised and improved. Crown 8vo. 10s. 6d.

Ronalds's Fly-Fisher's Entomo-logy: With coloured Representation of the Natural and Artificial Insects, and a few Observations and Instructions on Trout and Grayling Fishing. *Fifth Edition*; with 20 new-coloured Plates. 8vo. 14s.

Rowton's Debater: A Series of complete Debates, Outlines of Debates, and Questions for Discussion; with ample References to the best Sources of Information. Fcp. 8vo. 6s.

Dr. C. W. Russell's Life of Cardinal Mezzofanti: With an Introductory Memoir of eminent Linguists, Ancient and Modern. With Portrait and Facsimiles. 8vo. 12s.

SchimmelPenninck (Mrs.) — Life of Mary Anne SchimmelPenninck. Edited by her relation, CHRISTIANA C. HANKIN. Fourth Edition, carefully revised throughout; with a few Additions and a Portrait of Mrs. SchimmelPenninck. Post 8vo. 10s. 6d.

SchimmelPenninck's (Mrs.) Select Memoirs of Port Royal. *Fifth Edition*, revised, &c. by C. C. HANKIN. 3 vols. post 8vo. 21s.

SchimmelPenninck's (Mrs.) Principles of Beauty; with an Essay on the Temperaments, and Thoughts on Grecian and Gothic Architecture. Edited by C. C. HANKIN. With 12 coloured Illustrations in Facsimile of Original Designs by Mrs. SchimmelPenninck. price 12s. 6d.

SchimmelPenninck's (Mrs.) Sacred Musings on Manifestations of God to the Soul of Man; with Thoughts on the Destiny of Woman, and other subjects. Edited by C. C. HANKIN; with Preface by the Rev. Dr. BAYLEE. Post 8vo. 10s. 6d.

Dr. L. Schmitz's History of Greece, mainly based upon Bishop Thirlwall's History. *Fifth Edition*, with Nine new Supplementary Chapters on the Civilisation, Religion, Literature, and Arts of the Ancient Greeks, contributed by C. H. WATSON, M.A. Trin. Coll. Camb.; also a Map of Athens and 137 Woodcuts designed by G. Scharf, jun., F.S.A. 12mo. 7s. 6d.

Scoffern (Dr.)—Projectile Weapons of War and Explosive Compounds. By J. SCOFFERN, M.B. Lond. *4th Edition*. Post 8vo. Woodcuts, 9s. 6d.

Senior.—Journal kept in Turkey and Greece in the Autumn of 1857 and the beginning of 1858. By NASSAU W. SENIOR, Esq. With 2 Maps and 2 Views. Post 8vo. 12s.

Sewell (Miss).—New Edition of the Tales and Stories of the Author of *Amy Herbert*, in 9 vols. crown 8vo. price £1. 10s. cloth; or each work complete in one volume, separately, as follows:—

AMY HERBERT.....2s. 6d.
GERTRUDE.....2s. 6d.
The EARL'S DAUGHTER..2s. 6d.
The EXPERIENCE of LIFE..2s. 6d.
CLEVE HALL.....3s. 6d.
IVORS, or the Two COUSINS 3s. 6d.
KATHARINE ASHTON....3s. 6d.
MARGARET PERCIVAL..5s. 0d.
LANETON PARSONAGE..4s. 6d.

Also by the Author of Amy Herbert.

Passing Thoughts on Religion. *New Edition*. Fcp. 8vo. 5s.

Ursula: A Tale of English Country Life. 2 vols. fcp. 8vo. 12s.

History of the Early Church: from the First Preaching of the Gospel to the Council of Nicea. 18mo. 4s. 6d.

Self-Examination before Confirmation: With Devotions and Directions for Confirmation-Day. 32mo. 1s. 6d.

Readings for a Month preparatory to Confirmation: Compiled from the Works of Writers of the Early and of the English Church. Fcp. 8vo. 4s.

Readings for every Day in Lent: Compiled from the Writings of Bishop JEREMY TAYLOR. Fcp. 8vo. 5s.

Bowdler's Family Shakspeare: In which nothing is *added* to the Original Text; but those words and expressions are *omitted* which cannot with propriety be read aloud. Illustrated with 36 Woodcut Vignettes. *Library Edition*, in One Volume, medium 8vo. price 21s.; *Pocket Edition*, in 6 vols. fcp. 8vo. price 5s. each; each *Play* separately, price 1s.

Sharp's New British Gazetteer, or Topographical Dictionary of the British Islands and narrow Seas: Comprising concise Descriptions of about 60,000 Places, Seats, Natural Features, and Objects of Note, founded on the best authorities. 2 vols. 8vo. £2. 16s.

Shee.—Life of Sir Martin Archer Shee, President of the Royal Academy, F.R.S., D.C.L. By his Son, MARTIN ARCHER SHEE, of the Middle Temple, Esq., Barrister-at-Law. 2 vols. 8vo. 21s.

Short Whist; its Rise, Progress, and Laws: With Observations to make any one a Whist-Player. Containing also the Laws of Piquet, Cassino, Ecarté, Cribbage, Backgammon. By Major A. New Edition; with Precepts for Tyros, by Mrs. B. Fcp. 8vo. 3s.

Simpkinson. — The Washingtons: a Tale of an English Country Parish in the Seventeenth Century. By the Rev. J. N. SIMPKINSON. Post 8vo. 10s. 6d.

Simpson.—Handbook of Dining; or, How to Dine, theoretically, philosophically, and historically considered: Based chiefly upon the *Physiologie du Goût* of Brillat-Savarin. By LEONARD FRANCIS SIMPSON, M.R.S.L. Fcp. 8vo. 5s.

Sir Roger De Coverley. From the Spectator. With Notes and Illustrations, by W. HENRY WILLS; and 12 Wood Engravings from Designs by F. TAYLER. Crown 8vo. 10s. 6d.; or 21s. in morocco by Hayday.

The Sketches: Three Tales. By the Authors of *Amy Herbert*, *The Old Man's Home*, and *Hawkstone*. Fcp. 8vo. price 4s. 6d.

Sleigh.—Personal Wrongs and Legal Remedies. By W. CAMPBELL SLEIGH, of the Middle Temple, Esq., Barrister-at-Law. Fcp. 8vo. 2s. 6d.

Smee's Elements of Electro-Metallurgy. Third Edition, revised; with Electrotypes and numerous Woodcuts. Post 8vo. 10s. 6d.

Smith (G.) — History of Wes-leyan Methodism. By GEORGE SMITH, F.A.S., Author of *Sacred Annals*, &c. VOL. I. *Wesley and his Times*; VOL. II. *The Middle Age of Methodism*, from 1791 to 1816. Crown 8vo. 10s. 6d. each.

Smith (J.) — The Voyage and Shipwreck of St. Paul: With Dissertations on the Life and Writings of St. Luke, and the Ships and Navigation of the Ancients. By JAMES SMITH, F.R.S. With Charts, Views, and Woodcuts. Crown 8vo. 8s. 6d.

The Wit and Wisdom of the Rev. Sydney Smith: a Selection of the most memorable Passages in his Writings and Conversation. 16mo. 7s. 6d.

A Memoir of the Rev. Sydney Smith. By his Daughter, LADY HOLLAND. With a Selection from his Letters, edited by MRS. AUSTIN. *New Edition*. 2 vols. 8vo. 28s.

The Rev. Sydney Smith's Mis-cellaneous Works: Including his Contributions to The Edinburgh Review. Four Editions:—

1. A LIBRARY EDITION (the *Fourth*), in 3 vols. 8vo. with Portrait, 36s.
2. Complete in ONE VOLUME, with Portrait and Vignette. Square crown 8vo. 21s. cloth; or 30s. bound in calf.
3. Another NEW EDITION, in 3 vols. fcp. 8vo. 21s.
4. The People's Edition, in 2 vols. crown 8vo. price 8s. cloth.

The Rev. Sydney Smith's Ele-mentary Sketches of Moral Philosophy, delivered at the Royal Institution in the Years 1804 to 1806. Fcp. 8vo. 7s.

Snow. — Two Years' Cruise off Tierra del Fuego, the Falkland Islands, Patagonia, and in the River Plate: A Narrative of Life in the Southern Seas. By W. PARKER SNOW. With Charts and Illustrations. 2 vols. post 8vo. 24s.

Robert Southey's Complete Poet-ical Works; containing all the Author's last Introductions and Notes. Complete in One Volume, with Portrait and Vignette. Medium 8vo. 21s. cloth; 42s. bound in morocco. Or in 10 vols. fcp. 8vo. with Portrait and 19 Vignettes, 35s.

Southey's Doctor, complete in One Volume. Edited by the Rev. J. W. WARTER, B.D. With Portrait, Vignette, Bust, and coloured Plate. Square crown 8vo. 21s.

Southey's Life of Wesley; and Rise and Progress of Methodism. Fourth Edition, edited by Rev. C. C. SOUTHEY, M.A. 2 vols. crown 8vo. 12s.

Spencer.—Essays, Scientific, Po-litical, and Speculative. By HERBERT SPENCER, Author of *Social Statics*. Reprinted chiefly from Quarterly Reviews. 8vo. 12s. cloth.

Spencer. — The Principles of Psychology. By HERBERT SPENCER, Author of *Social Statics*. 8vo. 16s.

Spitta.—Lyra Domestica: Christian Songs for Domestic Edification. Translated from the *Psaltery and Harp* of C. J. P. SPITTA. By RICHARD MASSIE. Fcp. 8vo. with Portrait, price 4s. 6d.

Sir James Stephen's Essays in Ecclesiastical Biography. *4th Edition*, complete in One Volume; with Biographical Notice of the Author by his SON. 8vo. 14s.

Sir J. Stephen's Lectures on the History of France. Third Edition. 2 vols. 8vo. 24s.

Stonehenge.—The Dog in Health and Disease: Comprising the various Modes of Breaking and using him for Hunting, Coursing, Shooting, &c.; and including the Points or Characteristics of Toy Dogs. By STONEHENGE. With about 70 Illustrations engraved on Wood. Square crown 8vo. 15s.

Stonehenge's Work on the Grey-hound: Being a Treatise on the Art of Breeding, Rearing, and Training Greyhounds for Public Running; their Diseases and Treatment: Containing also Rules for the Management of Coursing Meetings, and for the Decision of Courses. With Frontispiece and Woodcuts. Square crown 8vo. 21s.

Stow's Training System, Moral Training School, and Normal Seminary for preparing Schoolmasters and Governesses. Eleventh Edition; Plates and Woodcuts. Post 8vo. 6s. 6d.

Strickland.—Lives of the Queens of England. By AGNES STRICKLAND. Dedicated, by express permission, to Her Majesty. Embellished with Portraits of every Queen, engraved from the most authentic sources. Complete in 8 vols. post 8vo. 7s. 6d. each.

Tate on the Strength of Mate-rials; containing various original and useful Formulæ, specially applied to Tubular Bridges, Wrought Iron and Cast Iron Beams, &c. 8vo. 5s. 6d.

Tennent.—Ceylon: An Account of the Island, Physical, Historical, and Topographical: with Copious Notices of its Natural History, Antiquities, and Productions. Illustrated by 9 Maps, 17 Plans and Charts, and 90 Engravings on Wood. By Sir J. EMERSON TENNENT, K.C.S., LL.D., &c. *Fifth Edition.* 2 vols. 8vo. price 50s.

Bishop Thirlwall's History of Greece. Library Edition; with Maps. 8 vols. 8vo. £3.—An Edition in 8 vols. fcp. 8vo. with Vignette Titles, 28s.

Thomson's Seasons. Edited by BOLTON CORNEY, Esq. Illustrated with 77 fine Wood Engravings from Designs by Members of the Etching Club. Square crown 8vo. 21s. cloth; or 36s. bound in morocco.

The Rev. Dr. Thomson's Outline of the Necessary Laws of Thought: A Treatise on Pure and Applied Logic. 5th Edition. Post 8vo. 5s. 6d.

Thomson's Tables of Interest, at Three, Four, Four-and-a-Half, and Five per Cent., from One Pound to Ten Thousand, and from 1 to 365 Days, in a regular progression of single Days; with Interest at all the above Rates, from One to Twelve Months, and from One to Ten Years. Also, numerous other Tables of Exchange, Time, and Discounts. 17th Edition, revised and stereotyped. 12mo. 3s. 6d.

The Thumb Bible; or, Verbum Sempiternum. By J. TAYLOR. Being an Epitome of the Old and New Testaments in English Verse. Reprinted from the Edition of 1636. 64mo. 1s. 6d.

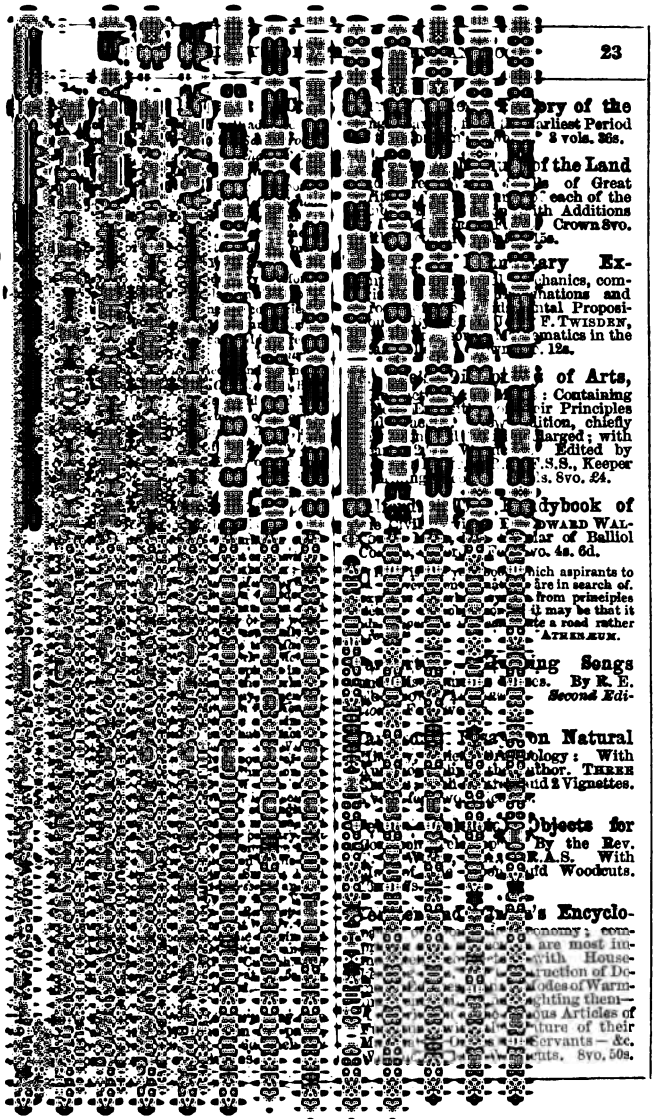
Todd (Dr.)—The Cyclopædia of Anatomy and Physiology. Edited by ROBERT B. TODD, M.D., F.R.S., &c. Now complete in 5 vols. 8vo. pp. 5,350, with 2,853 Woodcuts, £6. 6s. cloth.

Tooke.—History of Prices, and of the State of the Circulation, during the Nine Years from 1848 to 1856 inclusive. Forming Vols. V. and VI. of Tooke's *History of Prices*; with full Index to the whole work. By THOMAS TOOKE, F.R.S. and WILLIAM NEWMARCH. 2 vols. 8vo. 52s. 6d.

Trevelyan (Sir C.) — Original Papers illustrating the History of the Application of the Roman Alphabet to the Languages of India. Edited by MONIER WILLIAMS, M.A. 8vo. 12s.

Trollope.—The Warden, a Novel. By ANTHONY TROLLOPE. New and cheaper Edition. Crown 8vo. 3s. 6d.

Trollope's Barchester Towers, a Sequel to *The Warden*. New and cheaper Edition, complete in One Volume. Crown 8vo. 5s.



Weld.—Two Months in the Highlands, Orcadia, and Skye. By CHARLES RICHARD WELD, Barrister-at-Law. With 4 Illustrations in Chromo-lithography and 4 Woodcuts from Sketches by Mr. GEORGE BARNARD and the Author. Post 8vo. 12s. 6d.

Weld's Pyrenees, West and East. With 8 Illustrations in Chromo-xylography. Post 8vo. 12s. 6d.

Weld's Vacation Tour in the United States and Canada. 10s. 6d.

Weld's Vacations in Ireland. Post 8vo. 10s. 6d.

Dr. Charles West's Lectures on the Diseases of Infancy and Childhood. Fourth Edition, carefully revised throughout; with numerous additional Cases, and a copious INDEX. 8vo. 14s.

Dr. Charles West on Nursing Sick Children: Containing Directions which may be found of service to all who have the Charge of the Young. *Second Edition.* Fcp. 8vo. 1s. 6d.

White and Riddle.—A Latin- English Dictionary. By the Rev. J. T. WHITE, M.A., of Corpus Christi College, Oxford; and the Rev. J. E. RIDDLE, M.A., of St. Edmund Hall, Oxford. Founded on the larger Dictionary of Freund, revised by himself. Royal 8vo. [*Nearly ready.*

Whiteside.—Italy in the Nine- teenth Century. By the Right Hon. JAMES WHITESIDE, M.P., LL.D. *Third Edition*, abridged and revised; with a new Preface. Post 8vo. 12s. 6d.

Wilkins.—Political Ballads of the Seventeenth and Eighteenth Centuries, annotated. By W. WALKER WILKINS. 2 vols. post 8vo.

Willich's Popular Tables for ascertaining the Value of Lifehold, Leasehold, and Church Property, Renewal Fines, &c. With numerous additional Tables—Chemical, Astronomical, Trigonometrical, Common and Hyperbolic Logarithms; Constants, Squares, Cubes, Roots, Reciprocals, &c. Fourth Edition. Post 8vo. 10s.

Wills.—"The Eagle's Nest" in the Valley of Sixt; a Summer Home among the Alps: Together with some Excursions among the Great Glaciers. By ALFRED WILLS, of the Middle Temple, Esq. Barrister-at-Law. Second Edition, with 2 Maps and 12 Illustrations. Post 8vo. 12s. 6d.

Wilmot.—Lord Brougham's Law Reforms; or, an Analytical Review of Lord Brougham's Acts and Bills from 1811 to the Present Time. By Sir JOHN E. EARDLEY-WILMOT, Bart., Recorder of Warwick. Fcp. 8vo. 4s. 6d.

Wilmot's Abridgment of Black- stone's Commentaries on the Laws of England, in a series of Letters from a Father to his Daughter. 12mo. 6s. 6d.

Wilson's Bryologia Britannica: Containing the Mosses of Great Britain and Ireland systematically arranged and described according to the Method of *Bruch* and *Schimper*; with 61 illustrative Plates. Being a New Edition, enlarged and altered, of the *Muscologia Britannica* of Messrs. Hooker and Taylor. 8vo. 42s.; or, with the Plates coloured, price £4. 4s.

Yonge's New English-Greek Lexicon: Containing all the Greek Words used by Writers of good authority. *Second Edition.* Post 4to. 21s.

Yonge's New Latin Gradus: Containing Every Word used by the Poets of good authority. For the use of Eton, Westminster, Winchester, Harrow, and Rugby Schools; King's College, London; and Marlborough College. *Sixth Edition.* Post 8vo. 9s.; or, with APPENDIX of *Epithets*, 12s.

Youatt's Work on the Horse: With a Treatise on Draught. New Edition, revised and enlarged by E. N. GABRIEL, M.R.C.S., C.V.S. With numerous Woodcut Illustrations, chiefly from designs by W. Harvey. 8vo. price 10s. 6d. cloth.

Youatt.—The Dog. By William Youatt. A New Edition; with numerous Engravings, from Designs by W. Harvey. 8vo. 6s.

Zumpt's Grammar of the Latin Language. Translated and adapted for the use of English Students by Dr. L. SCHMITZ, F.R.S.E.: With numerous Additions and Corrections by the Author and Translator. 8vo. 14s.

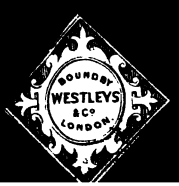
[*October* 1860.

LONDON: PRINTED BY SPOTTISWOODE & CO. NEW-STREET SQUARE.

This book should be returned to the Library on or before the last date stamped below.

A fine of five cents a day is incurred by retaining it beyond the specified time.

Please return promptly.

EX LIBRIS

NOXON TOOMEY